

red, with irregular transverse blackish spots. Upperside of the limbs with small reddish specks.

In the largest specimen the reddish tinge covers nearly the whole body, whilst in two others of middle size it is confined to the markings and the lower parts. In two young specimens it is not developed, the markings being of a dirty whitish colour.

This species, for which I propose the name of *Tejus rufescens*, appears to grow to the same size as the two other species.

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June 20, 1871.

R. Hudson, Esq., F.R.S., V.P., in the Chair.

The Secretary read the following Report on the additions to the Society's Menagerie during the month of May 1871:—

The total number of registered additions to the Society's Menagerie during the month of May was 181, of which 30 were by birth, 42 by presentation, 79 by purchase, 15 by exchange, and 15 were received on deposit. The total number of departures during the same period by death and removals was 114.

The following were the most remarkable additions during the month:—

1. Three specimens of a rather scarce and remarkable Water-Tortoise, *Sternotherus subniger* (*S. nigricans*, Dum. et Bibr. Erp. Gén. ii. p. 399), purchased May 3rd out of a vessel coming from Madagascar. We have already several specimens of a West-African species of the same genus, which I take to be *S. derbianus*, Gray, in the collection. The *Sternotheri*, I may remark, are very aquatic in their habits, keeping continually in the water, whereas the *Pelomedusæ* of the same family, at least in the case of our *P. ghesfæ*, seem never to enter the water.

2. A pair of the White-eared Fruit-bat of India (*Cynopterus marginatus*), purchased May 4th of Mr. Jamrach out of a collection of living animals brought home by him from Calcutta. This Fruit-bat is at once recognizable in life by the conspicuous white edging of the ears, and the white lines on the bones of the wings. It has not, I believe, been previously brought alive to Europe.

3. Two Marmots (*Arctomys*), also purchased of Mr. Jamrach at the same date. These animals are said to have been brought down to Calcutta by the Bhotanese, who conveyed a large number of Tragopans (*Ceriornis melanocephala*) from the same district of the Himalayas. They appear to be referable to *A. bobac*, the Siberian Marmot, and are quite new to the Society's collection\*.

\* See Dr. Anderson's notes on the two Himalayan Marmots, *infra*, p. 559 *et seq.*

4. A Lory, apparently of a new species, which I have already described at the last Meeting of the Society as *Lorius tibialis* \*.

5. A rare Lorikeet, believed to be referable to *Trichoglossus mitchelli*, G. R. Gray\*.

6. Three Crowned Partridges (*Rollulus coronatus*) from Malacca.

7. Four Black-throated Hill-Partridges (*Arboricola torqueola*) from the Himalayas.

8. A Long-billed Francolin (*Rhizothera longirostris*) from Malacca.

All these birds were purchased of Mr. Jamrach, along with the Mammals above mentioned, and belong to species new to the Society's collection.

9. A Galago, purchased May 5th, and said to have been brought from Port Natal, appears to agree nearly with the specimen described and figured by Mr. Bartlett (P. Z. S. 1863, p. 231, pl. xxviii.) as *Galago monteiri*. After examining this second specimen, I am inclined to think I was wrong in stating (P. Z. S. 1864, p. 712) that this Galago might turn out to be a pale variety of *G. crassicaudata*. Besides the difference in the colour of the fur, it is certainly smaller than that species, and has a much thinner and less densely furred tail.

10. A young male Chimpanzee (*Troglodytes niger*), brought home for us on his return from Africa and presented by Mr. J. J. Monteiro, C.M.Z.S., who has kindly given me some particulars concerning it, as follows:—

“The Chimpanzee was purchased from the blacks at Poanana, at the mouth of the river Congo; but as no inquiry had been made of the natives as to its exact place of capture, I am unable to give it to you. But this Monkey inhabits very plentifully the north bank of the Congo, whereas it is quite unknown south of that river.

“The manner in which this stream cuts off completely many species of animals, birds, insects, and plants, abundant north of it, and in its immediate vicinity, is most extraordinary and difficult of explanation, and would be perhaps an interesting subject for a naturalist to investigate on the south-west coast of Africa.

“The common Grey Parrot, found in thousands on the banks of the Congo, and northwards in Cabiuda, Loando, &c., is *totally absent* south, even at a few miles from the river; and I only know of its existence at Cassange, perhaps 300 miles to the interior of Loanda, whence the traders and caravans often bring fine live specimens of the ‘King Parrot,’ with red feathers distributed amongst its grey plumage.”

11. A Land-Tortoise of the genus *Cinixys*, also presented by Mr. Monteiro. This specimen appears to agree in every respect with specimens of *Cinixys belliana* in the British Museum, except in having a divided caudal plate. The entire caudal plate is a generic character of the genus *Cinixys*; so I consider this difference to be probably due to individual variation.

Mr. Monteiro has favoured me with the following notes on this Tortoise:—

“The Tortoise is from a granite range of low hills, coming down

\* See above, p. 499.

to the coast at Musserra (in about 7° S. lat.), and on one of which stands, as a prominent landmark, the 'remarkable granite pillar' of the charts of that coast. I only know this Tortoise elsewhere in the Benguella country, in 13° S. lat., in gneiss, and on a similar barren, very rocky ground. It only makes its appearance in the hot or rainy season, from October to May, and is said by the natives to hide deep in the ground during the cool season, or rest of the year."

12. A young Lemur, born in the Society's gardens on the 7th of May. Its mother was one of the so-called Black-fronted Lemurs (*Lemur nigrifrons*, Geoffr.); and its male parent must have been one of our Red-cheeked Lemurs (*Lemur collaris*, Geoffr.), as there are no other male Lemurs in the same compartment of the Monkey-house. Moreover, as already stated in my notes on this subject (*anteâ*, p. 231), the parents were evidently paired together. The little animal (which died the same day, and the skin of which I now exhibit) is certainly most like the female parent, though a male, and does not, so far, tend materially to confirm my theory of these two supposed different species being really opposite sexes of *Lemur mongoz*, although I have no doubt that this is correct.

13. A young male of the peculiar Bovine type of the island of Celebes, the Anoa (*Anoa depressicornis*), obtained by purchase of the Zoological Gardens of Rotterdam on the 10th of May, and being the first specimen of this animal exhibited in the Society's collection.

14. A young Eagle from the port of Fow-Chow in China, purchased May 11. This bird is in the striated plumage represented in Gray's 'Indian Zoology,' ii. pl. 28, which has been usually attributed to *A. imperialis*, but which Mr. Howard Saunders, in his recent remarks on this subject (P. Z. S. 1871, p. 38), believed to be the young of some allied species. In order to assist in the solution of this vexed problem, I have had a sketch made of our bird in its present plumage. This I now exhibit. We shall see what the bird turns into when it becomes adult.

15. A selection from a second collection of animals brought from Santiago, Chili, by Mr. Weisshaupt, under the same arrangements as those mentioned in the case of the similar collection received in July last year\*. The selection consisted of the following animals, acquired at a total cost of £136:—

1 Long-haired Armadillo, *Dasypus vellerosus*, from Mendoza.

4 Buenos-Ayres Cow-birds, *Molothrus bonariensis*, from Mendoza.

2 Chopi Starlings, *Aphobus chopi*, from Chili.

2 Long-winged Milvagos, *Milvago megalopterus*, from Chili.

2 Chilian Swans, *Cygnus coscoroba*, from Chili.

2 Andean Geese, *Bernicla melanoptera*, from Chili.

2 Dominican Gulls, *Larus dominicanus*, from Chili.

5 Rufescent Teguexins, *Teius rufescens*, sp. nov., from Mendoza.

Of these the *Dasypus vellerosus*, *Bernicla melanoptera*, *Milvago*

\* See P. Z. S. 1870, p. 664.

*megalopterus*, and *Teius rufescens* (described by Dr. Günther, *suprà*, p. 541) are species new to the Society's collection.

The Armadillo is of special interest as confirming a species established by Dr. Gray in this Society's 'Proceedings' for 1865\*, upon a single specimen obtained by Mr. Bridges in "Bolivia." I have examined the typical example in the British Museum, and have no doubt of our specimen being identical with it, though in our rather larger individual the hairs are still longer. It is possible the locality ("Bolivia") assigned to Mr. Bridges's specimen may be correct; but I am somewhat inclined to doubt it. In a collection of birdskins made by Mr. Weisshaupt in the district of Mendoza, and between San Juan and San Luis, in the Argentine Republic, during the same expedition as that in which he obtained *Dasyypus vellerosus* and the other animals, I have recognized several well-marked species, such as *Drymornis bridgesi* (Eyton), which are also commonly attributed to "Bolivia," but which were in all probability obtained by Mr. Bridges during his travels in the vicinity of Mendoza.

16. A Tamandua Ant-eater (*Tamandua tetradactyla*, Linn.) from the vicinity of Santa Marta, purchased May 29. The clever drawing of Mr. Keuleman's, which I exhibit (Plate XLIII.), will serve to give an idea of the external form of this animal, which has never been previously received alive by the Society, though we have at present two fine examples of *Myrmecophaga gigantea* living in the Menagerie, and have twice received living specimens of *Cycloturus didactylus*†. Our Tamandua measures as follows:—Long. corp. 20, caudæ 20, tota 40 poll. Angl.

17. Two examples of the peculiar Short-winged Rail of Lord Howe's Island, which I have lately described in this Society's 'Proceedings' an *Ocydromus sylvestris* (P. Z. S. 1869, p. 472, pl. xxxv.). For our specimens of this singular bird, as for so many rarities previously received, we have to thank our excellent friend and correspondent Dr. George Bennett, F.Z.S., of Sydney, N.S.W., and the authorities of the Botanic Gardens of that city.

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Prof. Newton exhibited a series of eggs collected by the German North-Pole Expedition, and transmitted to him by Dr. Finsch. The most interesting among them were presumed to belong to *Calidris arenaria*, partly from the fact that no other species was observed by the Expedition to which they could possibly be assigned, and partly from the fact that all of them agree in every essential character, and some of them precisely, with an authenticated specimen of the egg of this bird exhibited by Prof. Newton in January last, and figured in the Society's 'Proceedings' (P. Z. S. 1871, p. 56, pl. iv. fig. 2). This he then believed to be the first genuine egg

\* See P. Z. S. 1865, p. 376, pl. xviii.

† One of these Ant-eaters was "received on approval" from Mr. Colston, Sept. 16, 1854, the second "presented" by E. B. Webb, Esq., Sept. 5, 1858. The generic name is usually written *Cyclothurus*. Supposing the derivation of it to be *κυκλωτός rotundatus*, I prefer to write it *Cycloturus*.





M & N Hartmann mp

TAMANDUA TETRADACTYLA

Sci. Art. 1842. 1843



of the Sanderling which had been seen in England ; but an examination of the present series shows that an egg which he obtained in Iceland in 1858, and also exhibited, must in all likelihood be attributed to the same species.

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Prof. Macdonald, of the University of St. Andrews, exhibited a series of specimens illustrative of the cranial bones of fishes.

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An extract was read from a letter addressed to the Secretary by Mr. Walter J. Scott, C.M.Z.S., dated Valley of Lagoons, Queensland, March 16, 1871, stating that Mr. Haig, a planter on the Lower Herbert, had lately caught alive an apparently full-grown specimen of the Australian Cassowary (*Casuaris australis*), and was anxious to present it to the Society, if he could find an opportunity of sending it down to Sidney.

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The following papers were read:—

1. On the Myology of the Limbs of the Kinkajou (*Cerculeptes caudivolvulus*) &c. By J. BESWICK-PERRIN. (Communicated by Professor FLOWER, F.R.S., V.P.Z.S.)

[Received June 19, 1871.]

I am indebted to Professor Flower for his kindness in allowing me the privilege of dissecting this interesting and beautiful animal, recently one of the inmates of the Society's Gardens.

To the description of the muscles of the Kinkajou I have added some remarks on the myology of the limbs of the *Paradoxurus typus* and Caracal (*Felis caracal*), more particularly mentioning the chief points of difference between them.

The *sterno-mastoid* consists of two portions, an anterior and external, and a posterior and internal.

The *former* is smaller than the latter. It arises from the apex of the manubrium sterni, being overlapped at its origin by the anterior fibres of the pectoralis anticus muscle; opposite the middle of the neck it divides into two nearly equal-sized slips; the outer of the two is inserted fascial into the occiput; the inner one joins the outer side of the deeper division to be inserted along with it into the mastoid process of the temporal bone. The posterior or internal portion is half as large again as the preceding; it arises from the summit of the manubrium along with its fellow of the opposite side. It is inserted with the inner division of the preceding into the mastoid process of the temporal bone. In the *Paradoxurus* the sterno-mastoid is a single muscle; it is inserted into both the mastoid of the temporal and the occipital bones. In the Dog it is a single muscle at its origin, bifurcating into two near its distal extremity, one to be inserted into the digastric groove, the other into the lateral part of the os occipitis (Douglas).

The *levator claviculæ* is a long, slender, and entirely muscular slip, which arises from the bottom of the digastric groove, external to the digastric muscle. It passes almost directly backwards towards the shoulder, to be inserted into the rudimentary clavicle, behind the levator humeri, with which it is closely associated. In the *Paradoxurus* it has the same arrangement, except that it is situated at its origin a little internal and posterior to the digastric muscle. The clavicle in this animal is represented simply by a tendinous intersection in the levator humeri.

In the Dog it is described by Douglas as the *musculus ad levatorem accessorius*.

The *levator scapulæ* arises from the anterior aspect of the broad, expanded, and wing-like transverse process of the atlas. It is inserted into the spine of the scapula near its anterior extremity. In the *Paradoxurus* the atloid attachment is not so decidedly in front of the transverse process, being more to its lower and outer border. At its insertion it is continuous with the anterior scapular fibres of insertion of the trapezius muscle. This muscle is the *levator scapulæ major vel anterior* of Douglas\*.

The *levator scapulæ minor* is a detached segment of the levator anguli scapulæ. It arises from the lower border of the transverse process of the atlas, and is inserted into the dorsal extremity of the spine of the scapula. This muscle is wanting in the *Paradoxurus*. The slip which corresponds to it is blended with the levator anguli scapulæ. It presents the latter arrangement in the Dog.

The *occipito-scapular* occupies the rhomboid plane, and is very closely connected with the anterior border of the rhomboid muscle during its whole length. There is certainly a slight indication of an areolar interval; but the separation of this muscle from the rhomboid is arbitrary. In the *Paradoxurus* there is not the slightest trace of an areolar interval between the two. In the Kinkajon it arises from the occipital ridge external to the protuberance. The rhomboid is a continuation from the posterior border of this muscle downwards as far as the fourth dorsal spine. The occipito-scapular is inserted into the superior angle of the scapula, close to the base of the spine, and slightly in advance of the rhomboid muscle. The rhomboid extends from the preceding to the posterior inferior angle of the scapula. In the *Paradoxurus* the rhomboid does not extend along the neck beyond a point corresponding to the middle of its entire length.

The *omo-hyoid* arises from the superior angle of the scapula, lying between the supraspinatus and the subscapularis. It is inserted into the hyoid bone. In the *Paradoxurus* and Dog it is wanting.

The *levator humeri proprius* arises fleshy from the masto-occipital ridge and the posterior cervical raphe as low down as the second cervical vertebra. The origin of this muscle is inseparably connected with the trapezius at its lower part. It is inserted into the deltopectoral tubercle, where it blends with the lower fibres of insertion of the anterior pectoral muscle. The trapezius presents a remarkable arrangement, the muscles of the two sides being directly continuous

\* *Myographia Comparata*.



by means of a thin aponeurotic expansion across the dorsal mesial line, having no spinal attachments. The object of this arrangement is no doubt to facilitate the rapid approximation of the scapulæ, *e. g.* when the animal tears its prey.

This muscle is inserted into the anterior three-fourths of the scapular spine.

Besides there is an additional portion segmented from the preceding, which arises from the spines of the dorsal vertebræ from the second to the tenth inclusive. It crosses the inferior half of the vertebral border of the scapula and the adjacent portion of the infraspinatus, to be inserted into the lower and posterior half of the spine of the scapula.

The *serratus magnus* and *levator anguli scapulæ* constitute one large and continuous muscle. It arises, by fourteen digitations, from the transverse processes of the six lower cervical vertebræ, and from the nine upper ribs. The digitations are arranged in a radiate manner, advancing towards the middle line from the first to the sixth ribs, and then recedes to the ninth. Those attached to the six upper ribs extend as far as the anterior extremities of the vertebral ribs, springing from their upper margins; the three succeeding digitations do not advance so far forwards, and fit into corresponding processes from the external oblique muscle of the abdomen. Between the digitations attached to the second and third and third and fourth ribs pass the two superior muscular slips of insertion of the scalenus posticus.

The insertion of the serratus magnus does not present that twisted appearance common to the Primates; but it is simply flattened and extends the whole length of the vertebral border of the scapula.

In the *Paradoxurus* there is a similar arrangement, except that the levator anguli scapulæ representative is attached to all the cervical transverse processes; the upper and anterior one, no doubt, representing that which I have described in the Kinkajou as the levator scapulæ minor.

The *pectoral muscles* are three in number, viz. an anterior, a posterior superior, and a posterior inferior.

The *anterior* of these three pectoral muscles corresponds to the pectoralis major. It is elongated and irregularly quadrilateral in shape, and entirely muscular. It is attached proximally to the anterior half of the sternum and to the sternal extremities of the second to the seventh ribs inclusive. The most anterior fibres overlap, and are closely associated with the fibres of origin of the sternomastoid muscle. It is attached by its distal fibres to the upper half of the anterior border of the shaft of the humerus, extending from the great tuberosity to the distal end of the delto-pectoral ridge. It is partly blended with the fibres of insertion of the levator humeri.

The *posterior superior muscle* is situated behind the preceding. It is attached to the second, third, fourth, fifth, sixth, and seventh ribs close to the sternum, and also to the adjoining margin of the sternum. The muscular fibres converge as they pass outwards, finally terminating in a fascial expansion on the tuberosity of the

humerus, into which it is implanted. It also sends off a fascial process which blends partly with the capsular ligament of the shoulder-joint, reaching as far upwards and forwards as the rudimentary coracoid process. This muscle closely accords with the second pectoral of birds in attaining to the position of an elevator humeri.

The *posterior inferior muscle* arises from the seventh, eighth, ninth, and tenth ribs, from the lower third of the mesosternum, and slightly from the xiphisternum. Its upper part is overlapped by the preceding muscles, while its lower portion appears on the same plane as the anterior pectoral. Its fibres are directed obliquely forwards and outwards, to be inserted into the middle of the inner margin of the delto-pectoral ridge. This muscle is joined at its insertion by a very large *Achselbogen* from the latissimus dorsi.

In the *Paradoxurus typus* and Caracal there is a similar arrangement of the pectoral muscles, except that the posterior inferior portion in the latter animal has a much more extended attachment to the radial border of the humerus by means of an aponeurotic tendon.

The *epigastric* muscle consists of two or three isolated bands of the panniculus carnosus, which spring from the antero-lateral aspect of the thoracic subtegmental fascia; these unite together at their anterior and outer extremity, forming a moderately strong muscle, which passes through the axillary cavity, joining the upper border of the *Achselbogen* close to its insertion into the humerus.

The *epicostalis* arises from the third, fourth, and fifth ribs, close to the sternum. It passes in a direction obliquely upwards, forwards, and outwards, crossing superficial to the rectus abdominis muscle (which is prolonged as far forwards as the second and first ribs). It is inserted into the first rib directly in front of the outer half of the preceding muscle. This muscle has a similar arrangement in the *Paradoxurus typus* and Caracal.

The *subscapularis* in neither of these animals presented any notable peculiarities.

The *latissimus dorsi*, *teres major*, and the *dorso-lateral panniculus* constitute by their intimate distal association one large, extensive, and complex muscle. The latissimus dorsi occupies a central position between the three. The proximal attachments have the same disposition which is common to the majority of the higher animals. Distally, the latissimus dorsi divides into three portions—a superior, mesial, and inferior.

The *superior* constitutes the *Achselbogen* of the German authors. It is inserted into the delto-pectoral ridge behind the pectoral muscles, as already mentioned. This muscle crosses in front of the axillary vessels and nerves (exactly as it does in the human subject when present), and is joined prior to its insertion by a contributory slip from the dorsal panniculus.

The *mesial* portion blends with the *teres major*, the two being inserted together into a depression internal to the delto-pectoral ridge.

The *inferior* portion is given off in conjunction with the preceding. It passes down the inner and posterior aspect of the arm as a strong wedge-shaped muscle, and is finally inserted into the anterior and

inner border of the olecranon and fascia of the forearm. It receives about its middle a large slip from the dorsal portion of the panniculus. The latter muscle is also intimately associated with the *teres major*.

The *Paradoxurus typus* and Dog have a similar arrangement. In the Caracal the dorsal panniculus is not so differentiated as in the preceding, and the Achselbogen is wanting.

The *triceps* is large and exceedingly well-developed; the only point of note is that the representative of the anconeus is not segmented from the inner factor of the triceps, though in other respects disposed in the usual manner.

The *anconeus epitrochlearis* is small in the Kinkajou and in the *Paradoxurus typus*; but in the Caracal it is larger and more elongated. It arises in the latter from the ridge above the internal humeral condyle in front of the epicondyloid foramen. It is only partly inserted into the anconeal process, the remainder of its fibres being continuous with the flexor carpi ulnaris. This muscle, in combination with the flexor carpi ulnaris, simulates on the inner side of the humerus the supinator longus on the outside.

The *deltoid* consists of the two factors the mesodeltoid and post-deltoid, separated by an areolar interval. They present no remarkable features worthy of description.

The *supraspinatus* and *infraspinatus* have the usual arrangement.

The *teres minor* is represented by an unsegmented portion of the *infraspinatus*.

The *biceps* arises by two heads—one the analogue of the so-called long head of human anatomy, and the other the short head. Both arise in conjunction from the base of the coracoid tubercle. The long head is very large; it passes through the capsular ligament of the shoulder-joint, grooving the humerus. The short head consists of a narrow elongated tendon, which occupies almost half of the entire length of the muscle; it runs parallel with the long factor (after the latter has emerged from the bicipital canal) for some distance, then, passing in front of it, terminates at its distal extremity by blending with the anterior fibres of the long head. It is inserted into the radial tubercle. The short factor of the biceps gives origin to two varieties of the coraco-brachialis, viz. the short and the long. The coraco-brachialis brevis is an inverted-wedge-shaped muscle; it is inserted into the inner border of the neck of the humerus immediately above and extending somewhat behind the tendon of insertion of the *teres major*. The coraco-brachialis longus is a slender, elongated, wedge-shaped muscle; it arises from the tendon of the short head of the biceps, about half an inch below the preceding. The muscular fibres gradually taper into a tendon which occupies half the length of the entire muscle. It is inserted into the inner border of the humerus, immediately above the epicondyloid foramen.

This is a remarkable example of the coexistence of the long and short varieties of the coraco-brachialis of Wood. The latter accurate observer has placed on record several similar examples occurring in the human subject. I have also found several similar specimens;



but in no instance have they exhibited so complete and isolated a character as in the Kinkajou.

In the Caracal, *Paradoxurus*, and Dog the short variety of the coraco-brachialis only is represented, the long variety being absent. In the three latter animals the so-called biceps is a monogastric muscle, the long head alone being present. In this respect the Kinkajou presents a remarkable difference from the Dog, the Caracal, and the *Paradoxurus typus*, exhibiting a much higher grade of muscular development, and approximating more closely to the Primates. As regards the insertion of the biceps in the Dog, it is not always confined to the radius. I found it inserted into both the radius and ulna in a mongrel specimen.

*Brachialis anticus*. This muscle is very large and fleshy. It arises from the delto-pectoral ridge and upper half of the shaft of the humerus below this ridge. It is inserted into the coronoid process of the ulna. It has a similar arrangement in the Caracal and *Paradoxurus typus*. In the Dog the brachialis anticus is sometimes represented by an exceedingly small muscle which arises from the anterior surface of the lower end of the shaft of the humerus, instead of the more extensive attachment usually ascribed to it.

The *pronator radii teres* is a monogastric muscle. It arises from the inner humeral condyle below the epicondyloid foramen. It is inserted into a rough impression on the outer surface of the shaft of the radius, and into the bone for some distance below this point. It has a more extensive radial attachment in the *Paradoxurus*.

*Palmaris longus externus* arises by a pointed tendinous process from the internal humeral condyle, and from the septum between it and the adjacent muscles. It is inserted into the anterior annular ligament and palmar fascia; the latter is very thin, but disposed as in the human subject.

*Palmaris longus internus* is a fusiform muscle. It arises from the fascia covering the flexor carpi ulnaris, by a pointed tendinous process, about three quarters of an inch below the internal humeral condyle. It is inserted into the anterior annular ligament close to the pisiform bone; it is also partly continuous into the flexor brevis minimi digiti. This muscle may be regarded as a differentiated portion of the flexor carpi ulnaris; it is entirely supplied by the ulnar nerve. In the Caracal and *Paradoxurus* there is only the usual palmaris longus.

The *flexor carpi radialis* and *flexor carpi ulnaris* are like the corresponding muscles in the human subject. The ulnar nerve and the recurrent ulnar artery pass between the two heads of the latter muscle.

The *flexor sublimis digitorum* arises musculo-tendinous from the internal humeral condyle, coronoid process, and their connecting ligament. About half an inch below its origin it divides into a central and two flanking muscles. The two latter terminate in short tendons, which are inserted into the front and lateral aspects (one on each side) of the flexor profundus digitorum tendon, opposite the wrist-joint. The mesial portion divides into four tendons: three of these are superficial; but the fourth occupies the posterior aspect of the muscle,



and terminates in the profundus tendon opposite the same point, and situated between the tendons of insertion of the forementioned flanking muscles. The three superficial tendons pass beneath the anterior annular ligament, traverse the palmar aspect of the fore foot, and form the perforated tendons of the second, third, and fourth digits. The perforatus tendon of the fifth digit is formed by the flexor brevis minimi digiti, to be presently described. In the *Paradoxurus* there are two flanking slips only. The flexor minimi digiti longus gives an additional slip to the fourth digit, joining the flexor-perforatus tendon opposite the first phalanx.

The *flexor profundus digitorum* has the same origin as the flexor pollicis longus and profundus digitorum of the human subject combined. Immediately above the radio-ulnar carpal articulation this large and fleshy muscle terminates in a strong and flattened tendon, which divides, opposite the middle of the metacarpal shafts, into five tendons,—one, the smallest, to the pollex; the remainder to the respective digits, perforating the superficial flexor tendons. This muscle has associated with it four lumbricals, which are disposed as in the human subject. There is no representative of the coronoid origin of the flexor longus pollicis, so common in the human subject.

The *flexor minimi digiti longus*. This peculiar muscle arises from the pisiform bone and from the tendon of the palmaris longus internus. Its muscular belly is wedge-shaped, and terminates in a long, slender tendon, which splits to allow the perforans tendon of the fifth digit to pass to the terminal phalanx. It is inserted into the sides of the base of the second phalanx of the fifth digit. I have found the homologue of this muscle several times in the human subject; in one specimen it was especially remarkable, arising by two distinct heads—one from an aborted and entirely tendinous representative of an additional palmaris longus, the other from the tendon of the flexor carpi ulnaris. These two heads united together immediately above the wrist-joint to form one well-developed muscle, which finally joined to be inserted with the abductor minimi digiti. Professor Wood has recorded several similar specimens\* under the name of abductor minimi digiti. This muscle is not, however, an abductor, but decidedly a flexor of the little digit, and finds its homologue in the perforatus flexor of the fifth digit in the Carnivores.

The *abdactor minimi digiti* arises from the pisiform bone. It is inserted into the base of the first phalanx and the inner sesamoid bone opposite the metacarpo-phalangeal articulation.

The *flexor brevis minimi digiti brevis* arises also from the pisiform bone and tendon of the flexor carpi ulnaris. It is inserted into the base of the first phalanx on its ulnar side, and into the sesamoid bone. Besides these muscles there is another one, which corresponds in position and attachment to the opponens. It arises tendinous from the unciform bone and from the tendon of the flexor carpi ulnaris, prolonged from the pisiform to the fourth metacarpal base; As it passes along the metacarpal bone it divides into two portions. They are inserted into their respective sesamoid bones at the base of

\* "Variations in Human Myology," Royal Society's Proceedings, June 1868.

the first phalanx of the fifth digit. There is a small sesamoid bone developed in the tendon of origin of the latter muscle.

The muscles of the pollex are three in number :—

1. *Abductor pollicis*, which takes its origin from the radial sesamoid bone and the os trapezium. It is inserted into the radial side of the base of the first phalanx and its sesamoid bone.

2. The *opponens pollicis* arises from the trapezium. It is inserted into the distal part of the pollex metacarpal, and into the sesamoid bone on the radial side of the metacarpo-phalangeal articulation.

3. *Flexor brevis pollicis* consists of two portions: one arises from the trapezium, and is inserted into the sesamoid bone and base of first phalanx; the other arises from the trapezoid and os magnum, and is inserted into the ulnar side of the base of the pollex proximal phalanx without impinging on the sesamoid bone.

The *pronator quadratus* occupies almost the entire length between the two bones of the forearm.

The *interossei of the fore foot*. There are only two superficial palmar interossei. They arise together by a thin flat tendon from the os magnum. Directly after their origin they diverge from each other: the one on the radial side terminates at the base of the first phalanx of the second digit on its ulnar side; the other (or ulnar side one) goes to the radial side of the base of the first phalanx of the fifth digit: the first abducts the index digit from the pollex; the second adducts the fifth digit in the direction of the pollex. In the words of human myologists, both adduct towards a line drawn down the centre of either the third or fourth digit. The deep interossei are six in number: the first arises from the pollex and index metacarpal bases and shafts, the second and third from the interval between the second and third metacarpals; the fourth and fifth between the third and fourth, and the sixth between the fourth and fifth metacarpals. They are inserted as follows:—Each of the second, third, and fourth digits receives one on each side. There are two sesamoid bones in connexion with each metacarpo-phalangeal articulation; and these muscles are connected respectively with each of them, and thus prolonged to the sides and bases of the proximal phalanges.

The first, third, and fifth adduct the second, third, and fourth digits towards the pollex; the second, fourth, and sixth abduct them from the pollex. These muscles can scarcely be called interossei; they are situated in a great measure upon the metacarpals rather than between them. The superficial ones are altogether removed from contact with the metacarpals. A good name for the deep layer would be “bilateral flexors.” Any two of these muscles acting conjointly would produce direct flexion of the first phalanx on to the metacarpal. This is probably their true use in the living subject.

#### *The Extensors of the Fore Limb.*

The *supinator longus*, the *extensor carpi radialis longior* and *brevior* are exactly the same as in the human subject. In the

*Paradoxurus* and Caracal the two latter muscles are blended together; the common tendon resulting from the combined muscle divides behind the extensor ossis metacarpi pollicis into two, to be inserted into the radial sides of the second and third metacarpals.

The Kinkajou has these muscles much better developed and more perfect than the *Paradoxurus* and Caracal, and more in accordance with that condition which is called the average one in the human subject. This is not exactly true, however; for while the Kinkajou's muscles illustrate a decided advance above that of the Caracal, *Paradoxurus*, Dog, and Cat, and simulates the corresponding muscles in the Primates, still the human subject leads, and exhibits in the complexity of arrangement occasionally found in these muscles a tendency towards a further grade of muscular development which is minus a homologue in any other living animal. Douglas, in his 'Myographia Comparata,' states that the supinator longus is wanting in the Dog: I can scarcely say that it is wanting; it is aborted; its muscular belly is decidedly present and joined with the extensor carpi radialis communis. In several specimens which I have carefully examined, I have detected indications of segmentation of the supinator longus from its companion muscle. This was especially marked in a thoroughbred Spaniel which I had the pleasure of dissecting during last winter.

The *extensores communis digitorum* and *carpi ulnaris* and the *supinator brevis* present the usual arrangement.

The *extensor minimi digiti* divides into three tendons, to be distributed to the third, fourth, and fifth toes, joining the tendons of the common extensor on their ulnar sides.

The *extensor ossis metacarpi pollicis* is a large fleshy muscle; it is inserted into the trapezium and pollex metacarpal base.

The *extensor indicis* divides into two tendons: the radial one is distributed to the pollex, and constitutes its only phalangeal extensor; the ulnar one joins the ulnar side of the common extensor tendon to the second digit, to be inserted along with it.

#### *Muscles of the Hind Limb.*

The *psoas parvus* arises fleshy from the front and sides of the three upper lumbar vertebræ, and from the disks between the first and second, and second and third. The tendon of insertion is broad and flat, and commences on the superficial aspect of the upper part of the muscle, the muscular fibres being prolonged upon the under surface of the tendon for nearly half its length. It is inserted into the ilio-pectineal eminence and brim of pelvis immediately posterior to the origin of the pectineus. It lies superficial to the quadratus lumborum and *psoas magnus*, simply separated from the latter by areolar tissue.

The *ilio-psoas*. The *psoas magnus* arises from the front and sides of the bodies of the three lower lumbar vertebræ and their disks by fleshy fibres, and from the sacral surface and the posterior half of the pubic border of the ilium, where it becomes continuous with the iliacus. The latter arises from the iliac surface of the bone as a



small and entirely fleshy muscle ; it joins the preceding. The conjoined muscle is inserted by a very short and strong tendon into the lesser trochanter of the femur.

The *sartorius* arises from the upper third of the acetabular border of the ilium. It is inserted into the inner side of the patella, and into the shaft of the tibia immediately below the tuberosity. The tendinous expansion at the knee-joint is united to the ligamentum patellæ, and, stretching across the antero-lateral aspect of the joint, forms a protective covering to it.

The *gracilis*, three *adductores*, and *pectineus* present no peculiarities, except that the former is a very extensive muscle, and the adductor magnus is entirely fleshy, the femoral artery passing through a muscular canal and not a tendinous one as in the human subject.

The *rectus* has only one tendon of origin. It is inserted into the patella. The latter is not developed in the tendon of the rectus, but rather in the tendon formed by the conjoined vasti and crureus. There is no subcrureus ; the arrangement of the extensors of the leg presents no other peculiarities.

The *semimembranosus* arises from the ischial tuberosity by a flat tendon half an inch wide. It is inserted into a depression on the inner surface of the tibia, immediately below the tuberosity, passing behind the internal lateral ligament. Its tendon of insertion is about a quarter of an inch long, the rest of the muscle being fleshy.

The *semitendinosus* arises by two portions—one from the transverse processes of the third and fourth caudal vertebræ by a continuous tendinous process, and the other from the tuber ischii. These two heads unite about an inch and a quarter below their origin, forming a large muscle which is inserted into the middle of the inner surface of the shaft of the tibia. From the caudal origin, opposite its point of junction with the ischial factor, a long slender muscle is given off, which courses along the outer and posterior border of the gluteus maximus muscle as far as the lower end of the femur, into which it is inserted immediately above the external condyle. This is a very peculiar muscle ; I have only once met with the homologue of this slip in the human subject, a moderately muscular female *æt.* nineteen. It had not, however, the disposition as described in the Kinkajou. It arose from the long factor of the biceps femoris, and joined the semitendinosus immediately above the internal femoral condyle.

The *biceps femoris* arises by two heads—one, the ischial, by a pointed tendon from the tuberosity, the other from the transverse process of the second caudal vertebra, immediately anterior to the caudal factor of the semitendinosus. The former constitutes a broad, expanded muscle, increasing in width as it passes downwards. It terminates in a broad, expanded tendon, which is inserted into the head of the fibula and into the fascia of the leg to the extent of an inch and a quarter below this point ; the latter, or caudal factor of the biceps, runs parallel with the preceding, and terminates along with its lower fibres in the fascia of the leg, reaching as low down as within an inch of the ankle-joint.

There are no special peculiarities in the quadratus femoris, obtu-



ratores externus and internus, and gemelli. They present the same attachments and disposition as the corresponding muscles in man.

The *gluteus maximus* is a large, broad, and somewhat extensive muscle. It arises from the upper and posterior aspect of the iliac crest, from the sacral aponeurosis which covers the sacro-caudal muscles, and from the transverse processes of the third and fourth caudal vertebræ. It is inserted into the posterior aspect of the shaft of the femur, occupying fully its middle three-eighths. Its upper fibres only are tendinous at their insertion.

The *gluteus medius* arises from the upper two-thirds of the dorsal surface of the ilium, from the aponeurosis of the *gluteus maximus*, and also that separating it from the sacro-caudal muscles; it is more or less continuous with the pyriformis muscle, and inserted along with it into the great trochanter of the femur.

The *gluteus minimus* preserves its usual arrangement; the gemelli and obturator internus muscles seem to be differentiations from it.

The *tensor fasciæ femoris* is a fusiform muscle. It arises from the ilium (below the sartorius) by a pointed tendon; the muscle is about an inch and a quarter long, and terminates in the fascia of the thigh.

The capsular ligament of the hip-joint is very strong; the ligamentum teres only moderately so.

The *gastrocnemius* has a sesamoid bone developed on its outer head; it presents no decidedly interesting peculiarities.

The *soleus* is a single-headed muscle. It arises from the head of the fibula, and from the peroneal intermuscular septum. It is inserted into the os calcis along with the preceding.

The *plantaris* is a very large muscle. It arises from the outer femoral condyle, and is also attached to the sesamoid bone belonging to the outer head of the *gastrocnemius*. It terminates in a strong tendon which traverses the inner aspect of the os calcis, and, becoming expanded in the sole of the foot, forms the plantar fascia. It is closely associated in the sole of the foot with the *flexor brevis digitorum*.

In the Caracal, Dog, and *Paradoxurus* this muscle is not so large. In other respects it does not materially differ from that of the Kinkajou.

The *popliteus* muscle is very large and fleshy. The anterior tibial artery passes above its upper instead of below its lower border as in the human subject. Occasionally, however, this peculiar mode of distribution of the artery is met with in man; I met with one instance of it during the last winter session.

The *abductor minimi digiti* is aborted at the sixth metatarsal base, constituting Wood's abductor ossis metatarsi quinti.

The *flexor brevis digitorum pedis* is distributed only to the second, third, and fourth digits; each tendon, prior to its splitting for the passage of the perforans, is joined by a fleshy slip from the *accessorius*, given off from the latter opposite the point of junction of the long flexors with the *accessorius*. The perforatus tendon of the fifth digit is derived from a distinct wedge-shaped muscle, which springs

from the fibular aspect of the conjoined long flexor tendon, simulating a lumbrical muscle. It terminates in a long slender tendon, which splits to allow of the passage of the perforans tendon, and is inserted into the sides of the base of the fifth metatarsal second phalanx.

The *flexor longus pollicis* is mainly distributed to the third, fourth, and fifth digits. It is, however, intimately blended with the tendon of the flexor longus digitorum; the latter is mainly distributed to the first, second, and third digits. Both flex all the digits. The lumbricals are four in number, and are disposed as in man.

The *abductor hallucis* arises from the scaphoid bone by a pointed tendon, and fleshy from a sesamoid bone situated below the entocuneiform bone. It is inserted fleshy into the tibial side of the base of the first hallux phalanx and its sesamoid bone.

The *flexor accessorius* is a large monogastric muscle. It arises from the outer side of the os calcis. It is implanted into the conjoined tendon of the flexor longus hallucis et digitorum, and prolonged as three fleshy slips to the tendons of the flexor brevis digitorum as already mentioned.

The *flexor brevis hallucis* arises from the entocuneiform bone and the sheath of the peronæus longus. It is inserted into the sesamoid bone on the fibular side of the hallux metatarso-phalangeal joint.

The *flexor brevis minimi digiti* is comparatively large and fleshy. It arises from the sesamoid bone covering the base of the fifth metatarsal bone. It is inserted into the fibular side of the base of the first phalanx of the fifth digit. It has a sesamoid bone developed in its tendon of insertion.

*Obliquus tarsi.* This is a small muscle, conoid in shape, which arises from the depression between the prominent tubercle of the internal cuneiform on the inside, and the scaphoid and external cuneiform bones on the outside. It also receives a few fibres of origin from the tendon of the tibialis posticus. It is inserted into the tibial side of the base of the hallux metatarsal bone. I have ventured to give the above name to this muscle; so far as I am aware (I may be mistaken) it has not been previously described. I found it also in the *Paradoxurus typus*. When I dissected the Caracal, I did not notice this muscle, although I have no doubt it will be found in that animal also.

The *tibialis anticus* has its usual origin. It is inserted into the base of the hallux metatarsal. In the *Paradoxurus* and *Lynx* it is inserted into the hallux metatarsal and entocuneiform bones.

The *extensores longus hallucis* and *digitorum* present no special peculiarities.

The *extensor brevis digitorum pedis* is like that in man.

The *tibialis posticus* is inserted into the scaphoid ecto- and entocuneiform bones.

The *peronæus longus* and *brevis* are disposed exactly as in man. There is, however, an additional muscle, the peronæus intermedius or quartus. It arises in conjunction with the peronæus brevis, having a distinct and well-developed muscular belly which terminates in a long, slender tendon, which, having traversed the outer dorsal aspect

of the foot, is inserted into the base of the first phalanx of the fifth digit, previously joining the common extensor tendon.

This muscle has the same arrangement in the Dog, Caracal, and *Paradoxurus typus*. It is a muscle not unfrequently found in the human subject—seldom, however, in the complete form above described, but as a tendinous offset from the peronæus brevis, and usually described as the peronæus quinti.

The *interossei* present no essential differences from those described in the manus. The plantar are two in number, and arise from the sheath of the peronæus longus and ectocuneiform bone. The dorsal interossei are six in number, and arranged as in the hand.

2. Notes on some Rodents from Yarkand. By JOHN ANDERSON, M.D., F.L.S., F.Z.S., Curator of the Indian Museum, Calcutta.

[Received June 5, 1871.]

Having lately received examples of *Arctomys bobac*, *A. hemachalanus*, *Lagomys curzonæ*, and *Lepus tibetanus* from the country travelled over by the late Expedition to Yarkand, under Mr. Forsyth, I propose to describe them and to record a few facts regarding them, as they are species of rather rare occurrence and not very well recognized.

*Arctomys bobac* was figured and redescribed in 1841 by Hodgson\* as a new species, and named *A. himalayanus*. Two years afterwards he again described it, along with another form, *A. hemachalanus*, to which I shall presently refer, and spoke of the former as the *A. himalayanus* of his Catalogue, but as “*potius tibetanus hodie*.” In this account he says, “I cannot doubt that the above two species are distinct.” Horsfield† in 1851 correctly referred *A. himalayanus* to *A. bobac*, but, in a footnote, referred to Hodgson’s second paper, and made that naturalist describe an *A. tibetanus* and *A. himalayanus* as distinct, which he had never done, these two terms having been applied by him to one form, and the other, *A. hemachalanus*, restricted to another species. Blyth, in his Catalogue of Mammalia‡, includes these two species under *A. bobac*, and states that he could not discriminate them in the skins and skulls before him, which is not remarkable, as these all belonged to typical *A. bobac*. Adams§, however, was aware of two forms, but separated *A. himalayanus (tibetanus)* from *A. bobac*; and Dr. Jerdon|| mentions that he is inclined to accept them, as Hodgson insisted on their distinction and because he had himself seen skins in Darjeeling which inclined him to consider *A. hemachalanus* a distinct

\* Journ. As. Soc. x. p. 777 (cum fig.), *ibid.* xii. p. 409.

† Catalogue of Mamm. in India-House Museum, Lond. p. 164.

‡ Cat. of Mamm. in Museum of As. Soc. Beng., p. 108.

§ Proc. Zool. Soc. 1858, p. 528.

|| Mammals of India, p. 182.

species. Dr. Stoliczka\*, in a footnote to a notice of *Lagomys curzoniae*, Hodgs., gives it as his opinion that Blyth had good reason to unite Hodgson's *A. tibetanus* (*A. himalayanus*) and *A. hemachalanus* with *A. bobac*, but does not record the grounds of his belief. Blyth, however, had no materials to sanction the conclusion at which he arrived; and Dr. Stoliczka appears to have been in a somewhat similar position. Hodgson's description of the two species is, in fact, liable to mislead; for he apparently had never seen an adult of *A. hemachalanus*, a specimen of which before me, procured on the Yarkand Expedition, is 22 inches from the tip of the nose to the vent, while his largest individual measured only 13 inches. The species therefore appear to be nearly of one size; but their tails are very different. In *A. hemachalanus* the tail measures a little less than half the length of the body, while in *A. bobac* it is only one-fourth of the length of the body. There are other characters, however, by which these two forms are separable from each other; and these I shall now indicate by giving a detailed description of each.

#### ARCTOMYS BOBAC.

*Arctomys bobac*, Schreber, Säugeth. iv. p. 738.

*Mus arctomys*, Pallas, Glires, 98, t. 8.

*Arctomys fulvus*, Eversm. & Griffith, A. K. t. 118.

*Arctomys himalayanus*, Hodgs. Journ. As. Soc. Beng. x. p. 777 (cum fig.), xii. p. 409 (potius *tibetanus* hodie).

*Arctomys caudatus*, Jacquemont, Voy. dans l'Inde, Zool. p. 66.

*Arctomys bobac*, Gray, Cat. of Mamm. B. M. p. 148; Horsfield, Cat. of Mamm., Lond. p. 164; Blyth (in part.), Cat. Mamm. As. Soc. Mus. pp. 108, 109; Stoliczka, Journ. As. Soc. Beng. xxxiv. p. 111.

*Arctomys tibetanus*, "Hodgson," Adams, Proc. Zool. Soc. 1858, p. 521.

Twenty to twenty-four inches from tip of nose to vent; tail, exclusive of hair, nearly one-fourth of the length of the body, cylindrical, and bluff-pointed. Above subrufescent cat-grey †, washed with blackish brown on the back and sides and front of face; chin to vent and fore and hind limbs yellow, the latter inclined to rufous. Fur close, thick, adpressed, rather harsh,  $1\frac{1}{8}$  inch to  $1\frac{1}{4}$  inch long, trebly ringed on all the upper parts with dusky rufescent yellow and blackish brown, the latter most intense on the face, forehead, head, and back. Tail with a blackish-brown tip,  $1\frac{1}{2}$  inch long; palm with nails  $2\frac{1}{2}$ , sole  $3\frac{1}{2}$  inches. Sexes alike, of nearly equal size. "Molars 5.4: first above unicuspid and cylindrical in its body, and tuberculous on the crown; the rest double, low, flat, and rather hollow-crowned, but with a slight keel on the inner extremity, and a groove between two transverse ridges towards the cheek." (*Hodgson.*)

*Hab.* Yarkand. Three specimens of this species are from Yar-

\* Journ. As. Soc. Bengal, xxxiv. p. 111.

† The individual from which this specimen was taken was killed in the month of September.



kand, where they were obtained by the members of the Expedition that lately visited that country. As no heights are given on the notes attached to the specimens, I can say nothing about the elevation at which they were found. The specimens in this Museum, prior to the reception of these, were from Tibet and the north of Sikkim. The specimen from the former locality was presented by Mr. Hodgson, and the one from the latter was received alive in Calcutta. There is no evidence, however, that it was found in Sikkim; for it had in all probability been brought to Darjeeling for sale from the high and dry country to the north-east, in the way the Wah (*Ælurus fulgens*) is at the present day.

Hodgson, in his first description of the short-tailed Marmot, gives the Himalayah, Kachar (rarely), and the sandy plains of Tibet as its habitat; but in his contribution to our knowledge of the two species, published in 1843, restricts its distribution to Tibet, and gives the former localities, with the exception of the last-named, Tibet, as the habitat of his long-tailed species, *A. hemachalanus*, which, he states, is also found in the immediate neighbourhood of the snows in the Bhote pergunahs. From these facts it appears that at first he had given a wrong account of the distribution of *A. himalayanus* (potius *tibetanus* hodie), which he was enabled to rectify by his more enlarged experience and by the recognition of two distinct species with a Tibetan and Himalayan dispersion. Jerdon remarks that *A. bobac* crosses over the snowy Himalayas only for a short distance, but is found on the Indian side along the whole length of the range from Kashmir to Sikkim, though less abundantly than on the Tibet side, and never at a lower elevation than 12,000 feet, often up to 16,000 feet. Dr. Stoliczka observes that it ascends to 17,800 feet on the hill-slopes of Ladak, and that it constructs its very deep burrows mostly on the sides of the valleys near the bottom.

#### ARCTOMYS HEMACHALANUS.

*Arctomys hemachalanus*, Hodgs. Journ. As. Soc. Beng. xii. p. 410.

*Arctomys bobac*, Adams, Proc. Zool. Soc. 1858, p. 521; Blyth (in part.), Cat. Mamm. As. Soc. Mus. pp. 108, 109; Stoliczka, Journ. As. Soc. Beng. 1865, xxxiv. p. 111.

Length 22 inches from tip of nose to vent; tail  $10\frac{1}{2}$  inches, exclusively of the hair, nearly half the length of the body and head. Rufous ochreous\*; tip of hairs above washed with black, which is most intense on the back from the occiput to the lumbar region; pale yellow on the shoulders, which have few, if any, black-tipped hairs, and also on the sides, which are nearly free from them. Chin, throat, belly, fore legs, and inside of front of lower limbs deep rusty red; the outside of thighs pale rufous yellow, with a few black-tipped hairs; greyish hairs around the lips; cheeks washed with blackish; a large deep-black spot on the upper surface of the nose; the rest of the front of the face rufous yellow. Tail black, washed more or less with yellowish grey, the last four inches black. The

\* The specimen from which this description was taken was killed on the 22nd of June.

fur coarse, and nearly  $2\frac{1}{2}$  inches in length, loose and not adpressed; the black tips are not very long, and the yellow shows through them as a rule, but there are patches where they wholly obscure it; the base of the hair generally is rather rufous dark brown, and is succeeded by a broad rufous-yellow band, followed by the apical black one. Palm, including nails,  $2\frac{4}{12}$  inches; sole, including nails,  $3\frac{1}{2}$  inches. The heel is more sparsely clad with hairs along its margin than is the tarsus of *A. bobac*.

The three specimens before me were obtained, one at Malayan on the Tibetan side of the Tooglen pass, the other two by purchase at Darjeeling. They all present the above characters, with little or no variation. The deep rufous colouring of the underparts, the long coarse and loose hair, combined with the greater number of the caudal vertebræ, separate this species from *A. bobac*. It is probably the Marmot observed by Hooker in the Lachen valley to the south of Kinchinghow. Adams designates his *A. bobac* as the red Marmot of Europeans, and states that it abounds in the valley of the Dras river, Ladak, Wurdaun Pass, Cashmere, and at elevations on the neighbouring ranges from 8000 to 10,000 feet above the sea.

#### LAGOMYS CURZONIÆ, Hodgs.

*Lagomys curzoniæ*, Hodgs. Journ. As. Soc. Beng. xxvi. p. 207, Ann. & Mag. Nat. Hist. 1858, p. 80; Stoliczka, Journ. As. Soc. Beng. xxxiv. p. 108.

Upper surface of body pale buff, tinged with rufous, the hairs tipped with brownish; sides slightly more rufescent; head markedly rufescent as far back as on a line with the ear. Ears rather large and oval, very obscurely pointed, clad internally with long fluffy rufous hair confined to the lower three-fourths of that surface; the posterior three-fourths of the ear externally and internally margined with pale fulvous buff; the inside clothed with fine, rather short, buff hairs; the lower internal margin with long pale yellowish-buff hairs. Sides of head and behind nose dirty white, tinged with fulvous. Shoulders in some adult females pronouncedly rufous buff. Under surface from chin to vent white, with a faint yellowish tinge, or mixed with slaty when the bluish base of the hairs shows through their whitish tips. Limbs externally and internally and soles of feet white, with a faint yellowish tinge. Whiskers mixed black and white. Nails and pads of feet black. Teeth pure white.

The fur is moderately long, very fine and silky, and consists of three kinds of hairs. The ordinary hairs which constitute the bulk of the fur, and which measure  $\frac{1}{6}$  of an inch in length, have the basal  $\frac{8}{16}$  of an inch dark slaty; and the remaining terminal portion, when isolated, is seen to be a pale yellow, with a narrow brownish tip. With age the brown ends are worn off; but in young specimens, and even in adolescents, they are invariably present. Inter-mixed with these hairs there are numerous fine, curly, almost woolly ones, with the same markings and length, but not so intensely coloured. The third kind is a long, fine, bristle-like hair, 1 inch in length, very numerous on the upper and under surfaces, but not

so observable on the latter region, where they are pure white, whereas on the dorsum and sides they have either long black points or are wholly black. Length of largest specimen:—Tip of nose to vent  $9\frac{1}{6}$  inches; nose to anterior angle of eye  $\frac{1}{6}$  inch; posterior angle of eye to ear  $\frac{1}{6}$  inch; greatest length of ear 1 inch, greatest breadth 1 inch; length of fore foot and nails  $1\frac{9}{16}$  inch; length of hind foot and nails  $1\frac{9}{16}$  inch.

The hair of this species, and of the members of the genus generally, becomes much worn by age. This is doubtless due to their habit of life, and not to any disease produced by insects\*; for it is only observed, as a rule, on the parts exposed to friction, such as the lumbar region, rump, and sides, and is rarely, if ever, observable on the head or on the belly, and does not occur in the young, and only to a very slight degree in adolescents.

I have received no less than nine specimens of this species from Ladak, all procured in one month and within a few days of each other, but I cannot state at what elevation they were found. It is worthy of note that six are females, three of which are adults, two adolescents, and one young; while the three males are all of one size, about  $7\frac{1}{2}$  inches long, but evidently not full-grown. The latter are paler fawn-coloured than the females of their own age, but slightly darker than the young female. There is altogether a greater intermixture of dark hairs in the adolescent females than in the males; and the hair on the back of the ears is more rufous in the former.

Dr. Stoliczka (*l. c.*) states that it ranges all over the eastern portion of Ladak from 14,500 up to 19,000 feet, the probable limit of vegetation in these parts, but notes that Hodgson's specimens were from the Chumbi valley to the north of Sikkim, which would indicate that its eastern distribution is considerable. Dr. Hooker mentions a tailless Rat in the Lachen valley to the north of Kinchinghow at 16,000 feet, associated with a Marmot; but, from the elevation mentioned it is probable that the species is *L. roylei*, which appears to be identical with *L. hodgsoni*, Blyth, and *L. nepalensis*, Hodgson. The type of Blyth's species is in this museum, and was afterwards correctly referred by him to *L. roylei*; and as specimens of *L. nepalensis*, presented by Hodgson, are also before me, I am enabled to state that it in no way differs from *L. roylei* beyond exhibiting the slight variations of colour which are to be looked for and occur in all species. *L. roylei* takes the place of *L. curzonice* at lower elevations than 16,000 feet, its usual distribution, according to Jerdon, being 11,000 to 14,000 feet; but it probably extends up to 16,000 feet. It occurs in Ladak, Kashmir, on the Chor mountain, not far from Simla, and extends to the east through the high northern ranges of Nepal and Sikkim.

#### LEPUS TIBETANUS, Waterhouse.

*Lepus tibetanus*, Waterh. Proc. Zool. Soc. 1841, p. 7.

*Lepus oostolus*, Hodgs. Journ. As. Soc. Beng. ix. p. 1186.

\* Stoliczka, *l. c.*

General colour of back anterior to sacral region, neck, and head pale fulvous buff, mottled with black and yellowish white, darker on the face and on the internal half of the posterior surface of the ear, the latter area being concolorous with the forehead; a rufous tint on the back of the neck; hind quarter pale ashy grey; tail white, with an ashy-grey line above; limbs and under surface of neck, shoulder, groin, front of fore legs, under surface of feet, and upper surface of hind feet rather rufous buff; chin, throat, chest, belly, external half of posterior surface of ear, and inside of legs pure white. The ear is longer than the head,  $3\frac{1}{6}$  inches in length from base to tip, and about  $1\frac{3}{4}$  inch in breadth; its internal surface is densely covered with yellowish hairs, and the lower half of its inner margin with long white, rufous-washed hairs, and is tipped with black at the apex. Whiskers black and white, or black with long white tips. Incisors white. Nails dusky at the base, with horny-coloured tips. Fur very fine and woolly, of moderate length and silky texture; it is about  $1\frac{4}{16}$  inch in length; but there are numerous long hairs scattered through it measuring 2 inches long. The basal  $\frac{9}{16}$  inch of the fur is slaty; and many of the hairs have a black tip to the broad buff band that succeeds the darker band. Many of the long hairs on the buff parts of the upper surface have long black tips, while others have broad yellowish-white subapical bands, which, along with the black tips, produce the mottled appearance of the fur. Length from nose to vent 14 inches; tail  $2\frac{1}{2}$  inches.

*Hab.* Tibet. Four specimens.

A specimen of a Hare in this Museum, referred to *L. pallipes*, is essentially ochreous, as described by Waterhouse, and pencilled with black; and the base of the fur is white, instead of slaty as in *L. tibetanus*. The ears are coloured as in this species; but I cannot give their length, as the skin has not the skull in it and the head is much distorted. It appears to be a somewhat larger Hare than *L. tibetanus*, and is distinguishable by its rather rich ochreous coloration and black pencillated fur, which is white at its base instead of being slaty. Whether it is correctly referred to *L. pallipes* I do not say, as the specimen is in a very wretched state of preservation.

3. A Revised List of the Neotropical *Laridæ*. By P. L. SCLATER, M.A., Ph.D., F.R.S., and OSBERT SALVIN, M.A., F.L.S., &c.

[Received May 26, 1871.]

Dr. Cones having lately published an excellent account of the North-American *Laridæ* in several papers in the 'Proceedings of the Academy of Natural Sciences of Philadelphia'\*, we shall content

\* For the Gulls, see *op. cit.* 1862, p. 291; for the Terns, *ibid.* p. 535; and for the Skuas, *op. cit.* 1863, p. 121.



ourselves in the present communication with giving a revised list of the species of this family which have been ascertained to occur within the limits of the Neotropical region, so far as we are acquainted with them\*.

The Neotropical *Laridæ* may be divided into the following categories:—

(1) *Tropical* species, either not extending beyond the limits of the Neotropical region, or only into the southern part of the Nearctic region—such as *Phaëthus magnirostris* and *Rhynchops nigra*.

(2) *Antarctic* species, found only in the southern part of the continent, or not ranging further north than Southern Brazil and Peru—such as *Lestris antarctica* and *Sterna cassinii*.

(3) *Arctic* species, which descend into the Central-American seas, or even further into the Neotropical region—such as *L. franklini*.

(4) *Tropicopolitan*, or wide-ranging species in the Tropical seas—as *Anous tenuirostris* and *Onychoprion fuliginosus*.

The subjoined table shows the number of species of each genus referable to these categories:—

	Tropical.	Antarctic.	Arctic.	Tropico- popolitan.	Total.
1. Rhynchops .....	1	...	...	...	1
2. Anous .....	...	...	...	2	2
3. Nania .....	1	...	...	...	1
4. Phaëthus .....	1	...	...	...	1
5. Sterna .....	6	1	3	...	10
6. Gelochelidon .....	...	...	1	...	1
7. Onychoprion .....	...	...	...	2	2
8. Hydrochelidon .....	...	...	1	...	1
9. Larus .....	6	1	4	...	11
10. Leucophaeus .....	...	1	...	...	1
11. Lestris .....	...	1	...	...	1
	15	4	9	4	32

\* Since this paper was read Salvin has examined the specimens in the Imperial Cabinet at Vienna collected by Natterer in Brazil and determined by Von Pelzeln in his recently published 'Ornithologie Brasiliens.' According to our views the *Laridæ* of v. Pelzeln's work (Orn. Bras. p. 323) should stand as follows:—

Pelzeln.	Scl. et Salv.
<i>Larus aæaræ</i>	= <i>L. dominicanus</i> .
<i>Larus maculipennis</i> .	Natterer's specimens are all immature, and probably belong to <i>L. cirrhocephalus</i> .
<i>Larus atricilla</i>	= <i>L. atricilla</i> .
<i>Rhynchops nigra</i>	= <i>R. nigra</i> .
<i>Sterna galericulata</i>	= <i>S. maxima</i> .
<i>Sterna magnirostris</i>	= <i>Phaëthus magnirostris</i> .
<i>Sterna cayennensis</i>	= <i>S. galericulata</i> .
<i>Sterna cantiaca</i>	= <i>S. cantiaca</i> .
<i>Sterna argentea</i>	= <i>S. superciliaris</i> .
<i>Sterna wilsoni</i>	= <i>S. cassini</i> .
<i>Sterna aranca</i>	= <i>S. anglica</i> .

## Subfam. I. RHYNCHOPINÆ.

## Genus RHYNCHOPS.

## 1. RHYNCHOPS NIGRA, Linn.

*Rhynchops nigra*, Linn. S. N. i. p. 228; Licht. Doubl. p. 80; Baird, B. N. A. p. 866; Max. Beitr. iv. p. 877; Burm. Syst. Ueb. iii. p. 454, et La Plata, ii. p. 320; Léotaud, Ois. de Trin. p. 534; Pelz. Orn. Bras. p. 324; Ph. et Land. Cat. Av. Chil. p. 50; Gundl. Rep. F. N. i. p. 393; Salvin, Ibis, 1865, p. 193, et 1866, p. 200.

*Rhynchops melanura* et *R. borealis*, Swains. An. in Men. p. 340; Sel. et Salv. P. Z. S. 1866, p. 201, 1867, pp. 593, 754; Cab. in Schomb. Guian. iii. p. 761.

*Rhynchops cinerascens* et *R. brevirostris*, Spix (av. jr.).

*Rayador*, Azara, Apunt. iii. p. 329.

*Hab.* Coasts of America, from Cuba (*Gundlach*) down to 45° S. l. (*Darwin*); on the western coast of South America down to Concepcion (*Ph. et Landb.*); also ascends the larger rivers many hundreds of miles, Ucayali (*Bartlett*); Rio Napo (P. Z. S. 1858, p. 77); Matogrosso and Cajutuba (*Natt.*).

The southern bird is separated by Swainson as having the tail black; and we were at one time inclined to adopt this view, both Wallace's and Bartlett's Amazonian specimens presenting this feature, whereas Salvin's series from Central America have the lateral tail-feathers pure white, and a well-defined white collar behind. But one of Salvin's skins shows the lateral rectrices dark in the middle; and as his specimens were all shot in midwinter, it is possible that the tail of the northern bird may grow blacker in the summer plumage. At the same time, it is probable that northern and southern birds may be generally distinguished by the greater amount of white on the wings and tail of the former.

## Subfam. II. STERNINÆ.

## Genus 1. ANOUS, Leach.

## 1. ANOUS STOLIDUS.

*Sterna stolidus*, Linn. S. N. i. p. 227; Less. Zool. Coq. i. p. 244; Max. Beitr. iv. p. 874; Burm. Syst. Ueb. iii. p. 453.

*Anous stolidus*, Baird, B. N. A. p. 865; Cones, Ibis, 1864, p. 392; Gundl. Rep. F. N. i. p. 393; Sund. Öfv. af K. V. A. F. 1869, p. 590.

*Hab.* Cuba (*Gundlach*); St. Bartholomew (*Sund.*); British Honduras (*Salvin*); coast of South-east Brazil (*Max.*); coast of Chili (*Lesson*).

## 2. ANOUS TENUIROSTRIS.

*Sterna tenuirostris*, Temm. Pl. Col. 202.

*Anous melanogenys*, Léotaud, Ois. de Trin. p. 547 (?).

*Anous tenuirostris*, Coues, Ibis, 1864, p. 393; Salv. Ibis, 1866, p. 200.

*Hab.* Coast of British Honduras (*Salvin*); Trinidad (*Léotaud*).

## Genus 2. NÆNIA\*, Boie.

## 1. NÆNIA INCA.

*Sterna inca*, Less. Zool. Voy. Coq. p. 731, t. 47 (1826).

*Anous inca*, Gray, Gen. iii. p. 661; Pelz. Orn. Novara-Reise, p. 156.

*Nænia inca*, Bp. C. R. xlii. p. 773.

*Noddi inca*, Gay, Cat. Aves Chil. p. 50.

*Inca mystacalis*, Jard. Contr. Orn. 1850, p. 32.

*Larosterna inca*, Blyth, Cat. Mus. As. Soc. p. 293 (1849).

*Hab.* Coast of Peru (*Less.*, *Tsch.*); coast of Chili (*Ph. et Lanib.*).

## Genus 3. PHAETHUSA, Wagler.

## 1. PHAETHUSA MAGNIROSTRIS.

*Hati cabeza negra*, Azara, Apunt. iii. p. 373.

*Sterna magnirostris*, Licht. Doubl. p. 81 (1823); Max. Beitr. iv. p. 861; Hartl. Ind. Azar. p. 26; Spix, Av. Bras. ii. p. 81, t. 104; Cab. in Schomb. Guian. iii. 761; Tsch. F. P. *Aves*, p. 305; Pelz. Orn. Bras. p. 324; Burm. Syst. Ueb. iii. p. 450, et La Plata-Reise, ii. p. 519; Sch. et Salv. P. Z. S. 1867, p. 593 et p. 979.

*Hab.* Guiana (*Schomb.*); Lower Amazon (*Wallace*); Upper Amazon, Pebas (*Hauxwell*); rivers Huallaga and Ucayali (*Bartlett*); S. E. Brazil (*Max. et Burm.*); Rio Parana (*Burm.*); Cuyaba (*Natt.*); Paraguay (*Azara*); coast of Peru (*Tsch.*).

## Genus 4. STERNA, Linn.

## 1. STERNA MAXIMA.

*La grande Hirondelle de Mer de Cayenne*, Buff. Pl. Enl. 988.

*Sterna maxima*, Bodd.

*Sterna cayennensis*, Gm. S. N. i. p. 608; Léotaud, Ois. de Trin. p. 535.

*Sterna cayana*, Lath. Ind. Orn. ii. p. 804.

*Thalasseus cayanus*, Gosse, B. Jam. p. 431.

*Sterna regia*, Gamb. Proc. Ac. Nat. Sc. Phil. iv. 128; Baird, B. N. A. 859.

*Thalasseus regius*, Coues, Ibis, 1864, p. 388; Salvin, Ibis, 1866, p. 198; Gundl. Repert. F. N. i. p. 392.

*Sterna erythrorhynchos*, Max. Beitr. iv. 857; Tsch. F. P. *Aves*, p. 305; Burm. Syst. Ueb. iii. p. 450.

*Hati cogote obscuro*, Azara, Apunt. iii. p. 372 (?).

*Sterna chloripoda*, Vieill. N. D. xxxii. p. 171, et E. M. p. 349?

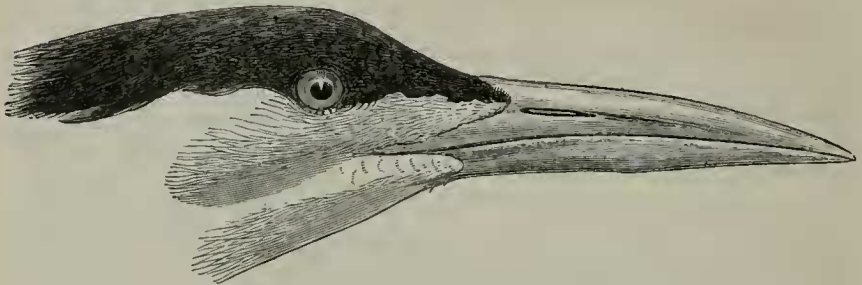
*Hab.* West Indies, Cuba (*Gundl.*); Jamaica (*Gosse*); S. Croix (*Newton*); Trinidad (*Léotaud*); Pacific and Atlantic coasts of Guatemala (*Salvin*); coast of Cayenne (*Buffon*); coast of Brazil (*Max. et Natt.*); Rio Paraná (*Azara*); coast of Peru (*Tsch.*).

Of this Tern Salvin has many specimens from the Guatemalan coast, which have been compared by Mr. Coues with types of *S. regia* of Gambel. We have also a series of skins of the same bird

\* Boie, Isis, 1849, p. 189, = *Larosterna*, Blyth, Cat. Mus. As. Soc. Calcutta, p. 293 (1849), = *Inca*, Jardine, Contr. Orn. 1850, p. 32.

collected by Mr. Rogers on the coast of South Brazil. There can therefore be no question of its being found in the intermediate localities. As it appears to agree better than any other species with Buffon's *Grande Hironnelle de Mer de Cayenne* (Hist. Nat. ix. p. 219; Pl. Enl. 988), we adopt Boddaert's name *Sterna maxima*, as the first applicable to the bird. The only other large Tern to which Buffon's description and plate could possibly be referable is *Sterna galericulata*. But the bill of Buffon's figure is much more nearly like the stout bill of Gambel's *S. regia* than the slender incurved bill of *S. galericulata*.

Fig. 1.

Head of *Sterna maxima* (reduced one-third).

*S. erythrorhynchos* of P. Max. and Burmeister seems to be founded on Brazilian specimens of this species.

*S. maxima* is at once distinguishable from all other Neotropical Terns by its large size and strong straight bill (see fig. 1), which is upwards of  $2\frac{1}{2}$  inches in length from the front. Its wing measures from 14 to 15.5 inches. *S. galericulata*, which comes next to it in size (wing 11.5 to 12 inches), has the bill equally long, but much more slender and incurved (see fig. 2, p. 569). In the adult *S. galericulata* the under plumage has a rosy tinge, which we have never seen in skins of the present species.

## 2. STERNA GALERICULATA.

*Sterna galericulata*, Licht. Doubl. p. 81; Schlegel, Mus. des P.-B. *Sternæ*, p. 7.

*Sterna elegans*, Gamb. Pr. Ac. Nat. Sc. Phil. iv. 129; Baird, B. N. A. 860, pl. 94; Léotaud, Ois. de Trin. p. 542.

*Thalasseus elegans*, Coues, Ibis, 1864, p. 389; Salvin, Ibis, 1866, p. 198.

*Sterna comata*, Ph. et Landb. Wieg. Arch. 1863, pt. 1, p. 126.

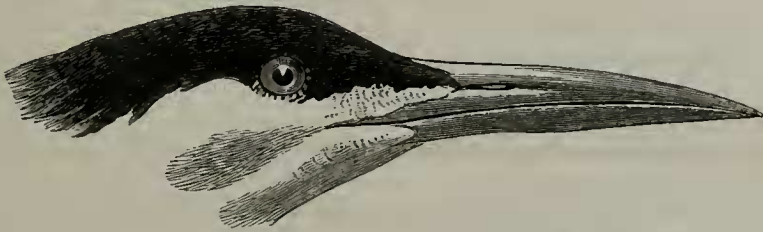
*Hab.* Tehuantepec (*Sumichrast*); Pacific coast of Honduras (*Dow*); Trinidad (*Léotaud*); Brazilian coast (*Licht.*); Arica, Peru (*Froben*).

Of this species Salvin has one specimen in winter plumage, shot by Capt. Dow in the Bay of Fonseca (which has been compared by Dr. Coues with the type of *S. elegans*), and a second specimen in full breeding-plumage from Tehuantepec. Two skins obtained by



Rogers on the coast of Southern Brazil offer no differences on comparison; and we are therefore induced to follow Prof. Schlegel in uniting *S. elegans* to *S. galericulata* of Lichtenstein, obtained from the latter locality. It may be observed that Lichtenstein's description of *S. galericulata* is nearly as well applicable to *S. maxima*; but as Prof. Schlegel has had the advantage of examining one of Lichtenstein's typical specimens, we cannot doubt that he is correct in making it identical with *S. elegans* of Gambel (*S. maxima* being = *S. regia*, Gambel).

Fig. 2.

Head of *Sterna galericulata* (reduced one-third).

On reading Messrs. Philippi and Landbeck's description of their *Sterna comata*, we find it in every way applicable to the present species, which might be naturally expected to extend down the western coast, as it does down the eastern coast of South America.

As already mentioned, the chief peculiarity of this species is its long, slender, slightly incurved bill.

### 3. STERNA CANTIACA.

*Sterna cantiaca*, Gm. S. N. i. p. 606; Schlegel, Mus. des P.-B. *Sternæ*, p. 5.

*Sterna acustavida*, Cabot, Proc. Bost. Soc. N. H. iii. 257; Baird, B. N. A. 860.

*Thalasseus acustavidus*, Coues, Pr. Acad. Phil. 1862, p. 540, et Ibis, 1864, p. 389; Salvin, Ibis, 1866, p. 198; Gundl. Rep. F. N. i. p. 392.

*Hab.* Coast of Cuba (*Gundlach*); Atlantic coast of British Honduras, and Pacific coast of Guatemala (*Salvin*).

We fail to appreciate the distinctions attempted to be drawn between this species and its European representative. Dr. Coues has ably discussed the subject, and has succeeded in reducing the differences between them to a minimum which is too small to warrant specific separation.

This is a northern species, and only appears to occur in the northern part of the Neotropical region. Salvin found it breeding on the coast of Belize in the month of May.

### 4. STERNA FORSTERI.

*Sterna hirundo*, Sw. et Rich. F. B.-A. ii. p. 412.

*Sterna forsteri*, Nutt. Man. ii. 274 (note); Baird, B. N. A. 862;

Coues, Proc. Ac. Phil. 1862, p. 544, et Ibis, 1864, p. 390; Salvin, Ibis, 1866, p. 199.

*Sterna chloripoda*, Léotaud, Ois. de Trin. p. 537?

*Hab.* Lake of Dueñas, Guatemala (*Salvin*); coast of Brazil (*Mus. S.-G.*).

Salvin obtained one specimen of this Tern in winter plumage on the Lake of Dueñas in October 1862, which has been examined by Dr. Coues. But it seems to go occasionally much further south, as Salvin and Godman's collection contains a skin, apparently of this species, taken at sea 300 miles off Pernambuco.

##### 5. STERNA TRUDEAUII\*.

*Sterna trudeauii*, Aud. Orn. Biogr. v. p. 125; Baird, B. N. A. p. 861; Coues, Pr. Ac. Sc. Phil. 1862, p. 542; Schlegel, Mus. des P.-B. *Sterna*, p. 29.

*Sterna frobeeni*, Ph. et Landb. Wieg. Arch. 1863, p. 125, et Cat. Av. Chil. p. 49.

*Hab.* Coast of Brazil (*Rogers*); coast of Chili (*Leybold*).

Mr. Rogers has lately sent a series of skins of a Tern from the coast of Southern Brazil, which appear to answer very fairly to *S. trudeauii* of Audubon, as redescribed by Dr. Coues from Audubon's type. Prof. Schlegel likewise recognizes the species in skins coming from the same locality. Like Audubon's and Prof. Schlegel's specimens, Mr. Rogers's eight skins are all white-headed, with a black transocular blotch. This would give one the idea of a Tern in winter dress; but we are inclined to agree with Prof. Schlegel that this species never acquires a black head.

It is very possible, we think, that there may have been some error in Audubon's locality for his single specimen of this bird (coast of New Jersey), as we know that a similar mistake has been made by him in other cases.

##### 6. STERNA CASSINI.

*Sterna antarctica*, Peale (*nec Less., nec Forst.*); Ph. et Landb. Cat. Av. Chil. p. 49.

*Sterna meridionalis*, Cassin, Zool. U. S. Expl. Exp. p. 385 (*nec Brehm*).

*Sterna cassinii*, Sclater, P. Z. S. 1860, p. 391; Pelzeln, Orn. Novara-Reise, p. 153; Abbott, Ibis, 1861, p. 166.

*Sterna wilsoni*, Burm. Syst. Ueb. iii. p. 451.

*Sterna hirundo*, Max. Beitr. iv. p. 865.

*Hab.* Falklands (*Pack, Abbott*); coast of Brazil, Sta. Catherina (*Rogers*); coast of Chili, up to Valdivia (*Ph. et Landb.*).

\* There is a beautiful adult specimen of this species in the Museum at Munich, which has recently been examined by Salvin. It was sent from Chili by Herr Leybold of Valparaiso. This specimen justifies Prof. Schlegel's surmise respecting the colour of the head of the adult bird of this Tern. The whole head is pure white; a dark transocular line traversing each side of the head, the rest of the body, except the rump, which is white, is light grey. The bill is black, the base being yellowish and the tip yellow. Feet yellow.

We have before us specimens of this well-marked species from the Falklands, Straits of Magellan, and coast of Southern Brazil, that from the Falklands being Sclater's type. Messrs. Philippi and Landbeck tell us that it ranges up the western coast of South America as far as Valdivia. P. Max. obtained it off Rio de Janeiro on the eastern coast, but did not distinguish from *S. hirundo*.

This species is easily distinguishable by its wholly coral-red bill from all other Neotropical species.

#### 7. STERNA DOUGALLI.

*Sterna dougalli*, Mont. Orn. Dict.; Sund. Öfv. af K. V. A. Förh. 1869, p. 589.

*Sterna paradisea*, Baird, B. N. A. p. 863; Léotaud, Ois. de Trin. p. 539; Coues, Ibis, 1864, p. 389; Salvin, Ibis, 1866, p. 199; Gundl. Rep. F. N. i. p. 392.

*Hab.* Coast of Cuba (*Gundl.*); Belize (*Salvin*); Trinidad (*Léotaud*); St. Bartholomew (*Sund.*).

This is a northern, or rather "Aretopolitan," species, which descends as far south as the West Indies and coasts of Central America. Mr. Salvin found a few pairs on one of the Keys of Belize in May 1862, and believes they were preparing to breed there.

#### 8. STERNA SUPERCILIARIS.

*Hati ceja blanca*, Azara, Apunt. iii. p. 377.

*Sterna superciliaris*, Vieill. N. D. xxxii. p. 126, et E. M. 350.

*Sterna argentea*, Max. Beitr. iv. p. 871; Pelz. Orn. Bras. p. 325; Burn. Syst. Ueb. iii. p. 452, et La Plata-Reise, ii. p. 519; Coues, Ibis, 1864, p. 390; Scl. et Salv. P. Z. S. 1866, p. 200.

*Hab.* Paraguay (*Azara*); Rio Paraná (*Burm.*); Cuyaba (*Natt.*); coast of Brazil (*Max.*); Ucayali (*Bartl.*); Columbia (*Coues*).

We have specimens of three Neotropical species of the group of little Terns (*Sternula*) now before us. They may be readily distinguished by the colour of their bills, which in the present bird is of a uniform yellow throughout, in *S. antillarum* has a small black tip to both mandibles, whilst in *S. exilis* the whole apical half is black. Besides, *S. exilis* has a much more slender bill than the two allied species, and its under plumage is grey, not white.

Our skins of this Tern are from Southern Brazil (*Rogers*) and Cuyaba (*Natt.*); and we have also examined Mr. Bartlett's Ucayali specimens.

#### 9. STERNA ANTILLARUM.

*Sterna antillarum*, Lesson, Descr. Mamm. et Ois. p. 256 (1848); Coues, Proc. Ac. Phil. 1862, p. 552; Ibis, 1864, p. 390; Salv. Ibis, 1866, p. 199; Gundl. Repert. F. N. i. p. 393.

*Sterna argentea*, Léotaud, Ois. de Trin. p. 545.

*Sterna frenata*, Gambel, Pr. Ac. Phil. 1848, p. 128.

*Hab.* Coast of Cuba (*Gundl.*); Trinidad (*Léotaud*); British Honduras (*Salvin*).

Of this Tern Mr. Salvin's specimens have been examined by Dr.

Coues, and are therefore *S. antillarum* as understood by that author, and fully described *l. c.* Besides its black point, the bill is shorter and not so deep as in *S. superciliaris*.

So far as we know, this species does not go further south than the West-Indian seas.

#### 10. STERNA EXILIS.

*Sterna exilis*, Tsch. F. P. *Aves*, p. 306; Sclat. P. Z. S. 1867, p. 336 et p. 344.

*Sterna lorata*, Ph. et Landb. Wieg. Arch. 1863, pt. 1, p. 124.

*Hab.* Coast of Peru, near Lima (*Nation*); Arica (*Frobeen*); coast of Chili (*Mus. Brit.*).

Sclater has already expressed his doubts as to whether *S. exilis* of Tschudi is really applicable to the present species. Tschudi's description is manifestly taken from a young bird; and all that can be said is that it is more probably applicable to this species than to any other.

There can be no doubt that this Tern is the *S. lorata* of Messrs. Philippi and Landbeck, as their description accords in every respect with our specimen from Lima.

### Genus 5. GELOCHELIDON, Brehm.

#### 1. GELOCHELIDON ANGLICA (Mont.).

*Sterna anglica*, Mont. Orn. Dict. Suppl.; Max. Beitr. iv. p. 867.

*Gelochelidon anglica*, Cones, Ibis, 1864, p. 389; Salvin, Ibis, 1866, p. 199; Gundl. Repert. F. N. i. p. 392.

*Sterna aranea*, Pelz. Orn. Bras. p. 325; Burm. Syst. Ueb. iii. p. 452; Baird, B. N. A. p. 859.

*Hab.* Coast of Cuba (*Gundlach*); Trinidad (*Léotaud*); Pacific coast of Guatemala (*Salvin*); coast of Brazil (*Max.*); Rio Janeiro (*Natt.*).

This well-known species ranges down as far south as the coast of Southern Brazil, whence we have received specimens collected by Mr. Rogers.

### Genus 6. ONYCHOPRION, Wagler.

#### 1. ONYCHOPRION FULIGINOSUS.

*Sterna fuliginosa*, Gm. S. N. i. p. 605; Baird, B. N. A. p. 861; Sund. Öfv. af K. V. A. Förh. 1869, p. 589.

*Hydrochelidon fuliginosa*, Gosse, B. Jam. p. 433.

*Haliplana fuliginosa*, Coues, Ibis, 1864, p. 392; Salvin, Ibis, 1866, p. 200; Gundl. Rep. F. N. i. p. 393.

*Sterna luctuosa*, Ph. et Landb. Wieg. Arch. 1866, pt. 1, p. 126.

*Hab.* West Indies, Cuba (*Gundl.*); Jamaica (*Gosse*); Belize (*Salvin*); coast of Chili (*Ph. et Landb.*).

#### 2. ONYCHOPRION PANAYENSIS.

*Sterna panayensis*, Gm. S. N. i. p. 607.

*Haliplana panayensis*, Salvin, Ibis, 1864, p. 381, et 1866, p. 199.

*Haliplana panaya*, Coues, Ibis, 1864, p. 391.



*Onychoprion panaya*, Gould, B. Austr. vii. pl. 33.

*Sterna nubilosa*, Sund. Öfv. af K. V. A. Förh. 1869, p. 589.

*Haliplana discolor*, Coues, Ibis, 1864, p. 392; Lawr. Ann. L. N. Y. viii. p. 104; Elliot, Birds N. Am. ii. pl. 57.

*Hab.* British Honduras (*Salvin*); West Indies, Sombrero (*Allen*).

#### Genus 7. HYDROCHELIDON, Boie.

##### 1. HYDROCHELIDON FISSIPES.

*Sterna fessipes*, Linn. S. N. i. p. 228.

*Sterna plumbea*, Wils. Am. Orn. vii. pl. 60; Pelz. Novara-Reise, Orn. p. 155.

*Hydrochelidon plumbea*, Baird, B. N. A. p. 864.

*Hydrochelidon fessipes*, Coues, Ibis, 1864, p. 391; Gundl. Repert. F. N. i. p. 393; Salv. Ibis, 1864, p. 385.

*Hab.* West Indies, coast of Cuba (*Gundl.*); coast of British Honduras (*Salvin*); Chili (*Pelzeln*).

#### Subfam. III. LARINÆ.

##### Genus 1. LARUS.

##### Sect. A. BLASIPUS, Bruch\*.

##### 1. LARUS MODESTUS.

*Larus modestus*, Tsch. Wieg. Arch. 1843, pt. 1, p. 389; F. P. Aves, p. 53 et p. 306, t. 35; Pelz. Orn. Nov. Exp. p. 151; Ph. et Landb. Cat. Av. Chil. p. 48.

*Larus bridgesi*, Fraser, P. Z. S. 1845, p. 16, et Zool. Typ. t. 69.

*Blasipus bridgesi*, Bp. Rev. Zool. 1855, p. 21, et Consp. ii. p. 212.

*Hab.* Pacific coast of Peru, south of Lima (*Tsch.*); Valparaiso (*Bridges*); Chili (*Segeth*).

Of this Gull we have seen only the specimens in the British Museum, one of which is the type of Fraser's *L. bridgesi*. It is certainly quite distinct from *Larus fuliginosus*, although more nearly allied to it than to any other species. Mr. Fraser has already pointed out the differences between them. Of these, the more slender bill renders the present bird recognizable in every stage. Besides in the adult *L. fuliginosus* there is a distinct black hood, which is entirely wanting in *L. modestus*.

##### 2. LARUS FULIGINOSUS.

*Larus fuliginosus*, Gould, Zool. Beagle, iii. p. 141; Sclat. et Salv. P. Z. S. 1870, p. 323.

*Leucophæus fuliginosus*, Bp. Consp. ii. p. 232.

*Hab.* Galapagos (*Darwin, Habel*).

\* This MS. generic name of Bonaparte was first published by Bruch (Journ. f. Orn. 1853, p. 108), with *L. modestus*, Tschudi, for the type. Lawrence (B. N. A. p. 843) gives 1852 as the date of the genus, but no reference; Gray (List of Gen. p. 130) does the same; but Bonaparte (Rev. Zool. 1855, p. 21) expressly states that both this name and *Leucophæus* of his MS. were first published by Bruch in 1853.

This is a very distinct species, quite erroneously united by some authors to *L. belcheri*, and by others to *L. modestus*. The young bird is of a uniform brown, very similar to the corresponding stage of *Larus heermanni*, but immediately recognizable by its much stouter bill. The adult bird is of a nearly uniform cinereous, with a well-marked blackish hood; the wing-primaries are black; the tail cinereous like the body, with the upper coverts greyish white and the under coverts still paler. The legs and feet are black; the bill black, with the point of the upper mandible reddish. The small ciliary plumes all round the eye are of a bright reddish orange.

### 3. LARUS HEERMANNI.

*Larus heermanni*, Cass. Proc. Acad. N. Sc. Phil. vi. 187 (1852), et B. Calif. p. 28, pl. 5.

*Blasippus heermanni*, Bp. Consp. Av. ii. p. 211; Baird, B. N. A. p. 849; Coues, Ibis, 1864, p. 388; Salvin, Ibis, 1866, p. 198.

*Hab.* Coast of Western Mexico (*Abert*); Pacific coast of Guatemala (*Salvin*).

Fig. 3.



Head of *Larus heermanni* (reduced one-third).

Our reason for including this Gull in the list of Neotropical *Laridæ* is its occurrence on the western coast of Guatemala, where, however, Salvin only obtained it in immature plumage.

From the Museum of the University of Cambridge we have received a very fine series of skins of this species for examination. These were collected by the late Mr. James Hepburn, F.Z.S., on various points of the coasts of British Columbia and California. A very slight examination of them is sufficient to show how mistaken Prof. Schlegel was in uniting *Larus heermanni* to *L. belcheri* and *L. fuliginosus*. *L. heermanni* is in plumage most like *L. belcheri*, but immediately distinguishable by its paler mantle and grey lower back, and by the tail being black at its base and merely tipped with white. In the present species also (see fig. 3) the frontal feathers advance along the nasal grooves, on each side of the culmen, nearly up to the opening of the nostrils. In *L. belcheri* (as shown in fig. 4, p. 575), the nasal grooves are bare of feathers to a very much greater extent.

We have not had an opportunity of comparing *L. heermanni* with *L. crassirostris* of the seas of Japan and China; but, judging by what Prof. Schlegel says (*Mus. des P.-B. Lari*, p. 8), it must be distinct. In *L. heermanni* adult the bill is bright red crossed by a blackish band towards the tip, and the feet are nearly black. Prof. Schlegel describes the bill of *L. crassirostris* as yellow, and its feet as yellow or greenish.

#### 4. LARUS BELCHERI.

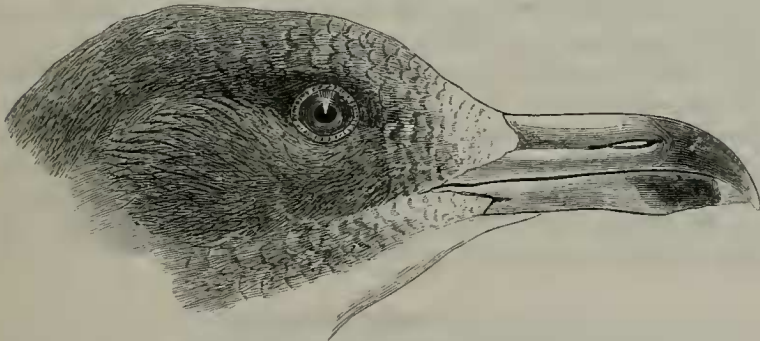
*Larus belcheri*, Vig. Zool. Journ. iv. p. 358 (1829); Zool. Beechey's Voy. p. 39; *Sci. et Salv. P. Z. S.* 1867, p. 991; Schleg. *Mus. des P.-B. Lari*, p. 9.

*Larus frobeeni*, Ph. et Land. Wieg. Arch. 1861, p. 292; *Cat. Av. Chil.* p. 48.

*Leucophæus belcheri*, Bp. *Consp.* ii. p. 232.

*Hab.* Coast of Peru, Islay (*Whitely*); Arica (*Frobeen*); Straits of Magellan (*Ph. et Landb.*).

Fig. 4.



Head of *Larus belcheri* (reduced one-third).

This Gull is quite distinct from the three preceding species, with all of which it has been confounded, as we have already pointed out above.

Messrs. Philippi and Landbeck have lately given an excellent description of it under the name *Larus frobeeni*.

The British Museum contains a fine adult specimen of this Gull, obtained by Mr. Whitely at Islay; and Salvin and Godman have an immature bird with a blackish cap, from the same collector and locality.

This bird cannot, in our opinion, be associated with *L. scoresbii* in the genus *Leucophæus*, not having the short and curiously wrinkled bill of that species. It stands, however, somewhat alone, having the base of the bill more bare than in typical *Larus* (in which the small frontal plumes project forward on each side of the culmen nearly up to the nostrils), and will probably ultimately rank as a distinct generic form.

## Sect. B. LARUS.

## 5. LARUS ARGENTATUS, Brünn.

*Larus argentatus*, Brünnich; Baird, B. N. A. p. 844.

*Larus smithsonianus*, Coues, Pr. Ac. Phil. 1862, p. 296; Gundl. Rep. F. N. i. p. 391.

*Hab.* Coast of Cuba, acc. (*Gundlach*).

This is probably only a straggler into the northern part of the Neotropical region.

## 6. LARUS DOMINICANUS.

*Larus dominicanus*, Licht. Doubl. p. 82; Max. Beitr. iv. p. 850; Gray, Gen. of B. iii. pl. 180; Darwin, Zool. Voy. Beagle, iii. p. 142; Gassin, Gilliss's Exp. ii. p. 204; Ph. et Landb. Cat. Av. Chil. p. 47; Gould, P. Z. S. 1859, p. 97; Selater, P. Z. S. 1860, p. 390; Abbott, Ibis, 1861, p. 165.

*Larus vociferus*, Burm. Syst. Ueb. iii. p. 448, et La Plata-Reise, ii. p. 518.

*Larus azaræ*, Pelz. Orn. Novara Exp. p. 151; Orn. Bras. p. 323.

*Hab.* Coast of Brazil (*Licht.*, *Max.*, *Burm.*); Ilha de Marambaya, Sapitiba (*Natterer*); Pampas of Buenos Ayres (*Darwin*); coast of Chili (*Ph. et Landb.*); Falklands (*Abbott*).

Of this Neotropical representative of *Larus fuscus* of our seas there are now living examples in the Society's Gardens from the Falkland Islands and from Chili. They are readily distinguishable from their European allies by their darker mantle and pale *flesh-coloured* legs. *L. dominicanus* appears to be a very abundant species on both coasts of South America, from the extreme south up to Southern Brazil on the east, and Peru on the west.

## Sect. C. CHROOCEPHALUS\*.

The Neotropical Hooded Gulls in their adult plumage may be shortly diagnosed as follows:—

- |   |                            |
|---|----------------------------|
| a. primariis externis totis nigris .....        | 1. <i>atricilla</i> .      |
| b. primariis ext. albo nigroque variegatis.     |                            |
| a. cucullo nigro.                               |                            |
| { major: pallio dilute cinereo secundariis con- | } 2. <i>serranus</i> .     |
| coloribus .....                                 |                            |
| { minor: pallio obscure cinereo secund. albo    | } 3. <i>franklini</i> .    |
| terminatis .....                                |                            |
| b. cucullo brunneo .....                        | 4. <i>glaucoodes</i> .     |
| c. cucullo plumbeo .....                        | 5. <i>cirrhocephalus</i> . |

## 7. LARUS ATRICILLA.

*Larus atricilla*, Linn. Syst. Nat. i. 225; Natt. Orn. Bras. p. 323 Sund. Öfv. af K. V. A. F. 1869, p. 590.

*Larus ridibundus*, Léotaud, Ois. de Trin. p. 532.

\* Usually written *Chroicocephalus*, or *Chræcocephalus* as amended by Strickland. But if, as we suppose, the derivation is χρώς, χροός, *color*, this is the proper orthography.



*Chroicocephalus atricilla*, Baird, B. N. A. 850; Coues, Ibis, 1864, p. 388; Gundl. Rep. F. N. i. p. 391; Newton, Ibis, 1859, p. 371.

*Xema atricilla*, Cab. in Schomb. Guian. iii. p. 761.

*Hab.* West Indies, Jamaica (*Gosse*), St. Croix (*Newton*), St. Bartholomew (*Sund.*); Cuba (*Gundl.*); Atlantic and Pacific coasts of Guatemala (*Salvin*); Guiana (*Schomb.*); Lower Amazon, near Pará (*Natterer*).

#### 8. LARUS SERRANUS.

*Larus serranus*, Tsch. Wieg. Arch. 1844, p. 314; Faun. Per. Aves, p. 307; Burm. Syst. Ueb. iii. p. 449, et La Plata-Reise, ii. p. 519; ScL. et Salv. P. Z. S. 1869, p. 158.

*Larus bonapartii*, ScL. et Salv. P. Z. S. 1868, p. 178.

*Chroicocephalus personatus*, Bruch, Journ. f. Orn. 1855, p. 289.

*Larus personatus*, Schlegel, Mus. des P.-B. *Lari*, p. 35.

*Gavia personata*, Blasius, J. f. Orn. 1865, p. 372.

*Hab.* Sierra and Puna regions of Peru (*Tsch.*); Islay and Tinta (*Whitely*); Bolivia (*D'Orb.*); rep. Argentina, Mendoza (*Burm.*).

The first skin of this Gull received from Mr. Whitely was in immature plumage, and was wrongly identified by us with *L. bonapartii*. It is, however, unquestionably identical with skins of birds in full plumage of the present species subsequently received from the same collector.

In its adult dress *L. serranus* is an unmistakable species, from its large size and deep-black head.

#### 9. LARUS FRANKLINI.

*Larus franklinii*, Swains. F. B. A. ii. p. 424, pl. 71 (1831); Sund. Öfv. af K. V. A. F. 1869, p. 590.

*Chroicocephalus franklinii*, Bruch, J. f. O. 1853, p. 289; Baird, B. N. A. p. 851.

*Larus pipixcan*, Wagl. Isis, 1831, p. 515\*.

*Chroicocephalus kittlitzii*, Bruch, J. f. O. 1853, p. 104(?).

*Larus cinereo-caudatus*, Ph. et Landb. Wieg. Arch. 1861, p. 293.

*Larus cucullatus*, Licht. Nomencl. p. 98 (*descr. nulla*).

*Chroicocephalus cucullatus*, Bruch, Journ. f. O. 1853, p. 290; Baird, B. N. A. 851; Coues, Ibis, 1864, p. 388; Salvin, Ibis, 1866, p. 198.

*Hab.* Lakes of Mexico (*Keerl et Boucard*); Pacific coast of Guatemala (*Salvin*); St. Bartholomew (*Sund.*); Panama (*Suckley*); coast of Chili, north of Concepcion (*Ph. et Landb.*).

After what Blasius has said in his critical remarks upon the *Laridæ* (Journ. f. Orn. 1865, p. 371), there can be little doubt that *L. cucullatus* is identical with *L. franklini*. We have ourselves gone carefully into this question, and can arrive at no other conclusion, although the American ornithologists appear to be of a different opinion.

\* In the Munich Museum there are six specimens of this Gull, which are probably Wagler's types, as they are named *Larus pipixcan*, and are labelled as coming from Mexico. All these specimens are immature, but are of different ages. They belong, no doubt, to *L. franklini*.—O. S.

Fine adult specimens of this Gull received from the lakes of Mexico agree well with Wagler's description of his *Larus pipixcan* from the same locality. On the Pacific coast of Guatemala Salvin obtained one specimen in immature plumage, and saw others. The skin thus collected was identified by Dr. Coues as *Larus cucullatus*, who likewise records the occurrence of this species under this name as far south as Panama (Proc. Acad. Sc. Phil. 1862, p. 309).

The fact of this Gull extending still further southwards, to Peru and Chili, is somewhat remarkable, but there seems to be little doubt on the subject. A specimen of *Larus franklini* in the British Museum is stated to have been obtained at Valparaiso by Burnett and Fitzroy; and a skin in immature plumage (exactly resembling the Guatemalan specimen) was purchased of the Maison Verreaux, marked "Chili." Besides this evidence, Messrs. Philippi and Landbeck's description of their *L. cinereo-caudatus* agrees accurately with *L. franklini* (cf. Sclater, P. Z. S. 1867, p. 336).

In the immature birds of this species the primaries are nearly uniform dark brown, whitish on the inner web, and the tail has a broad black subterminal band.

#### 10. LARUS GLAUCODES.

*Larus glaucodes*, Meyen, Obs. Zool. p. 115, pl. 24; Burm. Syst. Ueb. iii. p. 449; Cassin, Gilliss's Exp. ii. p. 204; Ph. et Landb. Cat. Av. Chil. p. 48.

*Larus glaucotis*, Schlegel, Mus. des P.-B. *Lari*, p. 42.

*Gavia glaucotis*, Blasius, J. f. Orn. 1865, p. 374.

*Larus albipennis*, Licht. MS.

*Gavia roseiventris*, Gould, P. Z. S. 1859, p. 97.

*Larus roseiventris*, Scl. P. Z. S. 1860, p. 391; Abbott, Ibis, 1861, p. 166.

*Hab.* Coast of Chili (*Meyen*); Falkland Islands (*Abbott et Pack*).

All the Patagonian and Chilian specimens of this Gull that we have met with belong, in our opinion, to one species, for which Meyen's name is the first. Skins from the Falkland Islands (*Gavia roseiventris*, Gould) are quite undistinguishable from Chilian examples, as Prof. Blasius (after examining Gould's type) has already stated\*.

#### 11. LARUS CIRRHOCEPHALUS.

*Gaviota cenicienta*, Azara, Apunt. iii. p. 350.

*Larus cirrhocephalus*, Vicill. N. D. xxi. p. 500, et E. M. p. 345; Gal. Ois. ii. t. 289; Scl. et Salv. P. Z. S. 1869, p. 146; Hudson, P. Z. S. 1870, p. 802.

*Larus poliocephalus*, Temm. Man. d'Orn. ii. p. 780 (1820); Max. Beitr. iv. p. 854.

*Cirrhocephalus plumbeiceps*, Bruch, Journ. f. O. 1855, p. 288.

*Larus maculipennis*, Burm. Syst. Ueb. iii. p. 448, et La Plata-Reise, ii. p. 518.

*Hab.* Pampas of La Plata (*Azara, Burm.*).

\* Journ. f. Orn. 1865, p. 374.

Not having been able to examine authentic specimens of this species (from La Plata and South Brazil), we reserve our remarks on it for a future occasion. If, as Bruch says, the cap of the adult bird is grey like the back (*J. f. Orn.* 1855, p. 288), there can be no doubt of its distinctness from the brown-headed *L. glaucodes*. Blasius and Schlegel both consider this bird identical with *L. phæocephalus*, Sw., of the coast of Africa.

As regards *Larus maculipennis* of Lichtenstein, Blasius is of opinion that it is a distinct species, allied to *L. glaucodes*\*. But *L. maculipennis* of Burmeister certainly belongs to the present bird.

## Genus 2. LEUCOPHÆUS, Bp.

### 1. LEUCOPHÆUS SCORESBII.

*Larus scoresbii*, Trail, Mem. Wern. Soc. iv. p. 514 (1823); Pelz. Orn. Novara Exp. p. 151; Abbott, Ibis, 1861, p. 165; Sclater, P. Z. S. 1860, p. 391.

*Larus hæmatorhynchus*, King, Zool. Journ. iv. p. 103 (1828); Jard. et Selb. Ill. Orn. t. 106; Darwin, Zool. Beagle, iii. p. 142; Ph. et Landb. Cat. Av. Chil. p. 48.

*Leucophæus hæmatorhynchus*, Bruch, *J. f. Orn.* 1853, p. 108, et 1855, p. 287.

*Leucophæus scoresbii*, Blasius, *J. f. Orn.* 1865, p. 378.

*Hab.* Patagonia, Port St. Julian (*Darwin*); Falkland Islands (*Abbott*); Chiloe (*Ph. et Landb.*).

This Gull is easily recognizable in every state of plumage by the peculiar form of the bill, which fully entitles it to generic rank. The young bird has a brown cap, just as in *Larus belcheri*, which disappears in the adult.

Fig. 5.



Head of *Leucophæus scoresbii* (reduced one-third).

## Subfam. IV. LESTRIDINÆ.

### Genus LESTRIS, Ill.

#### 1. LESTRIS ANTARCTICUS.

*Lestris antarcticus*, Less. Trait. d'Orn. p. 606 (1831); Abbott,

\* *Journ. f. Orn.* 1865, p. 374.

Ibis, 1861, p. 165; Sclater, P. Z. S. 1860, p. 390; Schl. et Salv. Ibis, 1869, p. 284; Ph. et Landb. Cat. Av. Chil. p. 47.

*Stercorarius antarcticus*, Pelzeln, Orn. Novara, p. 150; Ph. et Landb. Av. Chil. p. 47.

*Stercorarius catarrhactes*, Schl. Mus. des P.-B. *Lari*, p. 45.

*Hab.* Patagonia (*Cunningham*); Falkland Islands (*Abbott*).

It seems to be very doubtful whether this Skua is really distinct from the Arctic form. We have not been able to examine a sufficient number of specimens to satisfy ourselves upon this point.

*Appendix specierum nobis nondum obviarum.*

1. *Sterna acutirostris*, Tsch. Faun. Per. *Aves*, p. 305, from the highlands of Peru, found in company with *Larus serranus*.

2. *Sterna atro-fasciata*, Ph. et Landb. *l. c.* p. 204, et Cat. Av. Chil. p. 49, from Colchagua, Chili.

4. Review of the Genus *Ptiloris*, Swainson.

By D. G. ELLIOT, F.L.S., F.Z.S., &c.

[Received June 7, 1871.]

Having for some time devoted my attention to the various genera containing the different species of the Birds of Paradise, preparatory to publishing a monograph of that beautiful family, I propose in the present paper to offer some remarks upon the species of the genus *Ptiloris*, concerning which not a little confusion regarding the proper appellation and synonymy of two of them is to be observed in various ornithological publications. Two totally different species have been confounded together under the name of *magnificus*—one inhabiting New Guinea, the other the north-eastern portion of Australia. About a year ago, a fine collection of birds from Cape York, Australia, containing numerous examples of the Rifle-bird, figured by Mr. Gould as *magnificus*, arrived in London; and lately I have received examples of the New-Guinea species. On comparing the birds from these separate localities, their differences were at once appreciable; and it is only necessary to ascertain to which one the term of *magnificus* was originally applied, as it is evident they cannot both be retained under the same name. Vieillot in the 'Nouveau Dictionnaire d'Histoire Naturelle' (1819), vol. xxviii. p. 167, described the bird from New Guinea under the name of *Falcinellus magnificus*; and this has ever since been applied, under various generic terms, to both species of Rifle-birds indiscriminately by all ornithologists who have had occasion to mention them. One, and probably the chief cause of this mingling together of distinct forms is the great difficulty experienced by all collectors in obtaining good specimens of the birds from both the localities in which they are found, the majority heretofore received being without wings or legs or



some other important member, and it is only lately that fine examples have been obtained. Mr. George Robert Gray, some time ago, perceived that there were differences among the specimens of this section of the Rifle-birds in the British Museum, and in his manuscript notes affixed to the one from Australia, the name of *Ptiloris alberti*, but never published or wrote any account of it; and in his latest published work, the 'Hand-list of Birds,' he has placed his manuscript name among the synonyms of *Ptiloris magnificus*, which he rightly applies to the New-Guinea bird. Although among ornithologists it is generally conceded that manuscript names should not be recognized or adopted, I propose, in this instance, to make an exception to the practice, and to retain the name of *alberti* for the Australian bird. It is not to be denied that I should be perfectly right if I gave a new appellation to the species, as even the adoption of a manuscript name is not to be commended, as it is a kind of recognition that they may be noticed; but my desire is and always has been to clear up imperfectly known facts, and not to continue existing confusion; therefore as *alberti* has been employed in Mr. Gray's list, it is perhaps better to retain it, although an apology to my fellow ornithologists is due for so doing. Resembling each other very closely, there is nevertheless a considerable difference in the size and plumage of the two species, especially between the females, where the variations are very great and visible at once.

The true *P. magnificus* is much the larger bird, has a longer, stouter bill, stouter legs and feet, and longer wings. The chief difference in their plumage is to be seen upon the lower part of the breast, which in the New-Guinea bird is rich purplish violet, as mentioned by its describer, Vieillot, while the *P. alberti* is dark grass-green upon the same parts, the ends of the flank-feathers only being tinged with violet. The metallic colours of the throats and breasts are apparently the same, as are also the central tail-feathers. But it is in the females that the greatest variation in the hue of the plumage is to be seen, that of *P. magnificus* being of a rich brownish red upon the entire upper parts, the under parts white, closely barred with black; while the female of *P. alberti* is a light olive-brown upon the upper parts, wings and tail being rufous brown, and the under parts are very much lighter than in the female of its relative, the bars being narrower and wider apart. The throat is also pure white, that of the female *P. magnificus* being closely barred like the breast. I give below a list and description of the known species of *Ptiloris* with their proper synonyms added.

#### Genus PTILORIS.

*Ptiloris*, Swainson, Gen. and Class. Birds (1825), vol. ii. p. 331.

The name *Epimachus*, which has been usually applied to these birds, was originally bestowed by Cuvier upon the *E. magnus*, a form totally different from the Rifle-birds; and consequently Mr. Swainson's term is the one next in order to be employed.

## PTILORIS PARADISEUS.

*Ptiloris paradiseus*, Swain. Zool. Journ. vol. i. p. 481; Gray, Gen. of Birds, p. 15; Cab. Mus. Hein. Theil i. p. 214; Reich. Hand. der Spec. Orn. p. 328; Gould, B. of Austr. vol. iv. pl. 100; *id.* Handb. B. of Austr. vol. i. p. 591; Gray, Hand-l. Birds, part i. p. 105. sp. 1271.

*Epimachus brisbani*, Wils. Ill. of Zool. pl. 9.

*Epimachus regius*, Less. Zool. Voy. de la Coq. pl. 28.

*Hab.* South-east Anstralia (*Gould*).

*Male.* Top and back of head, with a large diamond-shaped mark upon the throat, bright metallic green; neck, back, and upper part of the breast rich deep purple; secondaries velvety black with purplish gloss; primaries black; flanks, lower part of breast, and abdomen very dark rich green; two central feathers very brilliant metallic green; rest of feathers rich blackish brown, with a purplish gloss on the outer webs; bill, feet, and legs black.

*Female.* Upper part of the head dark brown, each feather having a central line of light buff; line over the eye, extending to the occiput and throat, yellowish white; entire upper parts uniform olive-brown; primaries dark brown, with the edges of both webs rufous brown; tail same colour as the primaries, without the light edges; entire underparts light buff, each feather having an irregular black V-shaped mark diagonal with the shaft; bill, feet, and legs black.

## PTILORIS VICTORIÆ.

*Ptiloris victoriae*, Gould, Proc. Zool. Soc. (1849), p. 111, pl. 12; *id.* Birds of Austr. Suppl. pl.; *id.* Handb. Birds Austr. vol. i. p. 593; Reich. Handb. der spec. Orn. p. 329; Gray, Hand-l. Birds, p. 105, part i. (1871), sp. 1272.

*Hab.* Barnard Islands, N.E. Australia (*Macgillivray, Gould*).

*Male.* Smaller in size but very similar in plumage to the preceding species, the principal difference being that the purple on the upper part of the breast is apparently restricted, and forms a band across that portion of the body between the metallic throat and the green of the lower parts. Bill smaller than that of *P. paradiseus*, and, with the legs and feet, black.

*Female.* Also closely resembles that of *P. paradiseus*, but may be distinguished by its smaller size; upper part of head dark brown, striated with greyish brown; superciliary stripe and throat buff; upper parts greyish brown, shaded with olive; underparts deep buff, the feathers having a brown spot near the tips and irregularly barred on the flanks with the same.

For the two following species, as in the colour of their plumage and texture of feathers they differ considerably from those just described, Mr. Gray has proposed the generic term of *Craspedophora*, which it may be well to retain as a subgeneric division; but there does not appear sufficient reason for removing them from the genus proposed by Mr. Swainson.

## PTILORIS MAGNIFICUS.

*Falcinellus magnificus*, Vieill. Nouv. Dict. d'Hist. Nat. tom. xxviii. p. 167, pl. G 30. no. 3.

*Epimachus magnificus*, Cuv. Règ. Anim. 1829, p. 440.

*Le Proméfil*, Levaill. Ois. de Parad. p. 36, pl. 16.

*L'Epimaque proméfil*, Cuv. Règne Anim. (1817) p. 408.

*Epimachus paradiseus*, Gray, Gen. of Birds, vol. i. pl. xxxii.

*Epimachus splendidus*, Steph. Shaw's Gen. Zool. vol. xiv. p. 77.

*Craspedophora magnifica*, Gray, List of Gen. Birds, 2nd ed. p. 15.

*Ptilorhis magnificus*, Gray, Hand-l. Birds, part i. p. 165. sp. 1273.

*Hab.* New Guinea.

*Male.* Top of head and occiput, centre of throat, and entire upper part of breast shining bluish green, purple in certain lights; entire upper parts deep velvety black, with rich dark purple reflections; primaries black, with green reflections; a narrow line of green, red in some lights, beneath the metallic of the breast; breast, flanks, and abdomen purple; base of side-plumes also purple, basal half and filamentary ends black; two central tail-feathers shining green, remainder velvety black, with green reflections on their outer webs; bill, legs, and feet stout, black.

*Female.* Entire upper parts, wings, and tail rich brownish red; superciliary stripe white, the feathers tipped with blackish brown; cheeks and a line from the base of the lower mandible running back upon the side of the throat blackish brown; entire underparts white, narrowly barred with black; bill and feet black.

## PTILORIS ALBERTI.

*Ptiloris magnifica*, Gould, Birds of Austr. Suppl. pl.

*Craspedophora magnifica*, Gould, Handb. Birds. Austr. vol. i. p. 395. sp. 365.

*Ptilornis alberti*, Gray, MS.

*Hab.* Cape York, Australia (*Macgillivray*).

*Male.* Smaller than the previous species; top of head, occiput, centre of throat, and upper part of breast metallic bluish green; sides of head, neck, and upper parts velvety black, with a rich purple gloss; primaries greenish black; a bright olive-green line beneath the metallic shield of the breast; rest of underparts dark olive-green, changing upon the base of the flank-plumes to a light purple; under tail-coverts black; two central tail-feathers shining metallic green, remainder black, with green reflections on the outer webs; bill and feet slender, black.

*Female.* Entire upper parts light olive-brown; outer edges of wings and tail rufous brown; a broad blackish-brown line from bill through the eye to the nape of the neck; superciliary stripe and throat white; a narrow brownish-black line from base of under mandible along side of the throat; upper part of breast white, narrowly

barred with brownish black, lower part also white, but the bars fainter and wider apart; bill and feet black.

5. Description of a supposed new Species of Guinea-fowl from Ugogo, Central Africa. By D. G. ELLIOT, F.L.S., F.Z.S., &c.

[Received June 13, 1871.]

NUMIDA GRANTI.

*N. cristata, nigra; capite et gutture rubris; collo postice purpureo; cinctu collari nigro; corpore reliquo nigro, punctulis cærulescenti-albis passim maculato; primariis vix rufescenti-brunneis.*

Head with a full upright jet-black crest, like the other species belonging to this group of the genus *Numida*; entire upper part of the head and also the throat bright red; back and lower part of neck purplish black; entire plumage black, spotted all over with bluish-white dots; primaries bright brown; outer webs of the first secondaries white; tip of tail and line above knee-joint black, unspotted; bill greenish; feet and legs black.

*Hab.* Ugogo (*Grant*).

The present description was taken from a coloured drawing made by Colonel Grant from the only specimen shot by him during his adventurous journey with Captain Speke through Central Africa. It differs from all the species of this genus that I am acquainted with in having the head red, all the others being black in the regions of the eyes and ears, the present bird having the same colour upon those parts as is seen on the front of the throat. The drawing which Colonel Grant kindly placed in my hands is very carefully done, and is amply sufficient to illustrate the species, showing very clearly its peculiar characteristics. Colonel Grant has also handed me the following extract from his Journal:—"8th Dec., 1860.—Both off in different directions shooting from six A.M. until nine. I saw nothing except shooting a kind of Guinea-fowl with black ostrich-feather-like top-knot; back of head, eyes, and nostrils and windpipe red sealing-wax colour; neck in a loose ruffled skin of purple meeting at lower part in round collar-like edges. Body the usual bird's-eye; primary feathers brick-brown, a few of those next them edged with white. Legs black, above knee-joint jet-black feathers; the thigh spotted; not as round in body as Guinea-fowl, and very slightly compressed as seen on the ground." Although the distinguished travellers killed numbers of the common Guinea-fowl, this specimen was the only one of this form seen by them. I have great pleasure in naming it after Colonel Grant, who did so much towards bringing their hazardous journey to a successful issue, an undertaking which cannot but be regarded as one of the most remarkable ever accomplished.



6. Notes on the Localities of *Dolium melanostoma* and other Shells found in Australia and the adjacent Islands and in the Australian Seas. By JOHN BRAZIER, C.M.Z.S.

[Received May 24, 1871.]

1. CONUS RHODODENDRON.

*Conus rhododendron*, Couthouy, Ann. Lyc. Nat. Hist. New York.

*Conus adamsoni*, Gray, MS. British Museum.

*Conus cingulatus*, Sowerby, Tankerville Catalogue, Appendix, p. 34; Conch. Illust. f. 108.

*Conus adamsoni*, Reeve, Conch. Icon. pl. 4, species 22.

*Conus rhododendron*, Sowerby, Thes. Conch. vol. iii. frontispiece, fig. 504, p. 38, species 329.

*Conus adamsoni*, Chenu, Manuel de Conch. part 1, titlepage two figures, and page 249, figs. 1527 & 1528.

*Hab.* Bampton Reef and shoals, South Pacific Ocean, in lat., 19° 51' S., long. 158° 20' E. (*coll. Brazier*).

This fine and very rare species, described first by Couthouy, is not found on the Australian coast as stated by Mr. Reeve, Sowerby, and others. Of the fine variety figured by Chenu, I have only seen one specimen; and that was in the collection of my friend Mr. Hargraves. Of the type I have had four examples. As it is a deep-water shell, it is only found after heavy gales on the Reef, along with *Coni crocatus*, *floccatus*, *vitulinus*, *Voluta thatcheri*, *Strombi pacificus*, *samar*, and *thersites*, and *Pyrazus gourmyi*.

2. DOLIUM MELANOSTOMA.

*Dolium melanostoma*, Jay, Mus. Cat. 1839, p. 124, pls. 8 & 9; Reeve Conch. Icon. 1848, pl. 2. fig. 2; Catlow and Reeve, Conch. Nomenclator, p. 276.

*Hab.* Elizabeth Reef, South Pacific Ocean, in lat. 31° 43' S., long. 159° E. (*coll. Brazier*).

Reeve gives the Friendly Islands as the locality of this species, but it must be an error. My examples were obtained in deep water by a black, when diving for *Holothurixæ* or Bêche-de-mer. Elizabeth Reef is four hundred and fifty miles east of Port-Jackson Heads.

3. PARTULA CALEDONICA.

*Partula caledonica*, Pfr. Proc. Zool. Soc. 1861, p. 389; Pfr. Mon. Hel. Viv. vol. vi. p. 157.

*Hab.* Havannah Harbour, Sandwich Island, New Hebrides, also Vavua Lava, or Great Island, in Banks's Islands (*coll. Brazier*).

Dr. Pfeiffer gives the locality of this species as New Caledonia on the authority of the late Mr. H. Cuming. Up to the present time,

however, there has not been one of the genus *Partula* found, either in New Caledonia or the Loyalty Islands.

#### 4. PUPINA MOULINSIANA.

*Pupina moulinsiana*, Fischer et Bernardi, Journ. de Conch. 1856\*, p. 299, pl. 10. figs. 6 & 7; Pfr. in Mon. Pneum. Vivent. 1858, tome ii. p. 93, and 1865, tome iii. p. 92; Sowerby, Thes. Conch. vol. iii. pl. 265, *Pupinidæ*, fig. 36.

*Pupina leucostoma*, Montrouzier, MS.

*Pupina intermedia*, Angas, MS. Australian Museum.

*Hab.* Woodlark Island, north of the Louisiades, near the coast of Papua or New Guinea (*coll. Brazier*).

This species was described from specimens said to have been received from New Caledonia. It was taken there by the French Missionaries in their voyages from Woodlark Island. Dr. Pfeiffer, in his last number of 'Monographia Pneumonopomorum Viventium,' gives the correct locality; but Mr. Sowerby, in the 'Thesaurus Conchyliorum,' a still later work, goes back to the original New Caledonia. In going through the species in the Australian Museum, Sydney, I find two specimens named by Mr. Angas some time back when he was in Australia.

#### 5. PUPINA MERIDIONALIS.

*Pupina meridionalis*, Pfr. Proc. Zool. Soc. 1863, p. 526; Pfr. Monog. Pneum. Vivent. tome iii. p. 92.

*Pupinella macgillivrayi*, Cox, Catalogue of Australian Land Shells, 1864, p. 32.

*Pupina meridionalis*, Cox, in Monograph of Australian Land Shells, 1868, p. 100, pl. 16. figs. 7, 7a, 7b (7c, operculum); Sowerby, Thes. Conch. vol. iii. *Pupinidæ*, pl. 265. fig. 33.

*Hab.* Port Denison, Queensland (*coll. Brazier*).

This species is not found in South Australia as quoted by Dr. Pfeiffer and Mr. Sowerby, their valuable conchological works not being always correct as regards the localities of the species.

#### 6. PUPINA PLANILABRIS.

*Pupina planilabris*, Pfr. Proc. Zool. Soc. 1863, p. 526; Pfr. Monog. Pneum. Viven. tome iii. p. 93.

*Pupinella whartoni*, Cox, Catalogue of Australian Land Shells, 1864, p. 32.

*Pupina planilabris*, Cox, in Monograph Australian Land Shells, 1868, p. 99, pl. 16. figs. 11, 11a, 11b; Sowerby, Thes. Conch. vol. iii. *Pupinidæ*, pl. 265. fig. 34.

*Hab.* Port Curtis and Port Denison, Queensland, north-east coast of Australia (*Coll. Brazier*).

This is another species erroneously stated by the same authorities as in the case of the preceding one to be from South Australia.

\* Dr. Pfeiffer makes an error in his 'Mon. Pneum. Vivent.' 1858 when he refers to the description of this species in the 'Journal de Conch.' Jan. 1857. I find the description in that Journal of July 1856.

## 7. CYCLOTUS RECLUZIANUS.

*Cyclostoma recluzianum* (*Cyclotus*), Pfr. Proc. Zool. Soc. 1853, p. 51.

*Cyclotus recluzianus*, Pfr. in Malak. Bl. 1854, p. 80; H. & A. Adams, Gen. Rec. Moll. ii. p. 275; Pfr. in Mon. Pneum. Vivent. 1858, tome ii. p. 21, 1865, tome iii. p. 27; Reeve, Conch. Icon. pl. ix. fig. 53.

*Hab.* Dillon's Bay, Erromanga, New Hebrides (*coll. Brazier*).

The original or type specimens were collected at the same place by my late friend Mr. John Macgillivray; and during my visit to Erromanga, six years ago, I found it plentiful under decayed leaves in very damp places near the sea, and never upon any other island in the New Hebrides. The late Mr. Cuming was in error when he sent it to Dr. Pfeiffer with the locality "Solomon Islands." I have been through almost every island in the Solomons, and have not met with any of the genus *Cyclotus*.

## 8. CYCLOTUS MACGILLIVRAYI.

*Cyclostoma macgillivrayi* (*Cyclotus*), Pfr. Proc. Zool. Soc. 1855, p. 103; Pfr. Mon. Pneum. Vivent. 1858, tome ii. p. 21, 1865, tome iii. p. 27; Reeve, Conch. Icon. *Cyclotus*, pl. 9. fig. 57.

*Hab.* Aneiteum Island, New Hebrides: found inland in ravines under wood (*coll. Brazier*).

When Dr. Pfeiffer described this species, he gave the correct locality, and when he brought out his second part of 'Monographia Pneumonopomorum' he also gave it correctly, and at the same time a locality of his own, New Georgia, one of the Solomon Islands. It is impossible to find this species at any island in the Solomons. In the third part of the 'Monographia' he only gives "Nov. Hebrid.;" but it is only found on one island of the group, and not on all, as the term New Hebrides would imply.

7. Description of a new Species of *Monocondylea*.

By SYLVANUS HANLEY.

[Received June 5, 1871.]

MONOCONDYLEA WALPOLEI, Hanley.

*Testa valde inaequalateralis, ovato-oblonga, subrhomboidea, ventricosa (in medio autem, inferne leviter concava), concentric rugulosa, epidermide brunnea nitida vestita, antice angusta et superne angulata, postice dilatata et arcuatim rotundato-subbiangulata. Margo dorsalis antice declivis, postice leviter acclivis et paullulum subarcuatus. Margo ventralis in medio incurvatus, antice oblique et arcuatim acclivis. Area postica (seu umbonalis) lata, tripartita, superne concava, deinde indentata et rugis crassis elevatis obliquis divaricatim ornata,*

*inferne lata et subplanulata. Costa umbonalis rotundata, conspicua. Umbones eminentes. Lunula satis magna, lanceolata, angulatim excavata. Margarita colore salmonis cocti imbuta. Dentés validi; dens valvulæ sinistræ major et natibus propinquior.*

Long.  $1\frac{1}{2}$ , lat.  $2\frac{1}{2}$  poll.

*Hab.* Sarawak, Borneo (teste Geale). *Mus.* Hanley.

The description of *M. tumida* of Morelet (from Venezuela) accords in many respects with the features of this well-marked species, which is not indicated in Lea's recent catalogue of the Naiades. I have named it after Mr. W. Walpole, who is bestowing his attention on a group somewhat neglected in this country.

The ligamental sinus is very conspicuous.

8. Notes on Bush-bucks (*Cephalophoridae*) in the British Museum, with the Description of two new Species from Gaboon. By Dr. J. E. GRAY, F.R.S. &c.

[Received June 1, 1871.]

(Plates XLIV.-XLVI.)

The Bush-bucks form a very distinct group of Antilopine animals, peculiar to tropical or Southern Africa, and distinguished by their conical horns arising from the hinder edge of the frontal bone, so as to be placed far behind the eyes, by their having a streak of minute pores on the cheeks in the place of the usual tear-bag, and in the hair of the forehead being elongated and forming a more or less distinct tuft between the base of the horns.

The horns are in the same situation as the hinder horns of the four-horned Antelope of Asia, but that animal has a distinct crumen or tear-bag, with a single opening.

The specimens in the Museum form themselves into two very distinct groups, characterized by the nature of the fur and the form of the skull. On account of their habits, they are distinguished by peculiar names by sportsmen, as the Duykers and the Bush-goats, and we have in the Museum the skull of an animal from the Gaboon which appears to be intermediate between them; but, unfortunately, the animal belonging to this skull is unknown.

I have referred to the 'Catalogue of Ungulata furcipedes in the British Museum,' published in 1852; and there the synonyms will be found at length.

Col. Hamilton Smith figured in Griffith's 'Animal Kingdom,' vol. iv. p. 183, a species which he called *Antilope quadriscopa*, from a living specimen, said to have come from Senegal, and no specimen like the figure has, to my knowledge, occurred again; and knowing, as I do, how very slight were the sketches and notes of my early teacher and excellent friend, which he afterwards finished up into complete



drawings, I am inclined to think that a specimen of *Scopophorus* (probable *S. montanus*, which is found in W. Africa) was the origin of his species. No species of *Cephalophus*, as yet observed, has any knee-tufts.

The species may be thus arranged geographically:—

West Africa.	East Africa.	South Africa.
<i>G. splendidula</i> . Guinea.	<i>G. irrorata</i> . Natal.	<i>G. nictitans</i> .
<i>G. campbelliæ</i> . S. Leone.	<i>T. altifrons</i> ?	<i>G. burchellii</i> .
<i>Terpone longiceps</i> . Ga- boon.	<i>C. natalensis</i> . Natal.	<i>C. pygmaeus</i> .
<i>C. melanoprymnus</i> . Ga- boon.	<i>C. madoqua</i> . Abyssinia.	
<i>C. sybicultrix</i> . S. Leone.	<i>C. melanorheus</i> ?	
<i>C. ogilbyi</i> . Fernando Po, Gaboon.	<i>C. bicolor</i> . Natal.	
<i>C. badius</i> . S. Leone.		
<i>C. rufilatus</i> . Gambia.		
<i>C. dorsalis</i> . S. Leone.		
<i>C. niger</i> . Guinea.		
<i>C. nigrifrons</i> . Gaboon.		
<i>C. coronatus</i> . Gambia.		
<i>C. whitfieldii</i> . Gambia.		
<i>C. maxwellii</i> .		
<i>C. melanorheus</i> .		
<i>C. punctulatus</i> .		

### 1. GRIMMIA. (The Duykers.)

Horns elongate, more or less erect. Ears elongate, acute, covered with short hair. Fur soft, with some under-fur. Skull elongate; nose compressed; forehead flat, on the same plane as the nose; nasal oblong, elongate. (Peters, Mossamb. t. 41. f. 1, t. 42. f. 1, skulls.)

This genus appears to contain two groups of species, characterized by the skull, as I pointed out in the 'Catalogue of Ungulata in the British Museum,' p. 78. The former group contains four species, having different geographical distribution, and the latter at present only one.

The three species above referred to may be only geographic variations; but Mr. Layard and other naturalists who have lived in Africa assure me that they keep distinct, and they show no inclination to change when bred in the Zoological Gardens (see P. Z. S. 1867, p. 277).

\* *Head short; suborbital pit large, concave; intermaxillaries reaching to the edge of the nasals; nose-hole moderate, sides nearly parallel.*

### 1. GRIMMIA NICTITANS. (The Cape Duyker.)

*Cephalophus grimmia*, Gray, Cat. Ungul. B. M. p. 78.

Fur yellow-brown; forehead yellowish bay; nose blackish; underside of body rather paler. Young rather greyer.

*Hub.* South Africa: Cape of Good Hope.

We have three specimens of this species, male, female, and young, in the British Museum. Two were from the South-African Museum.

2. GRIMMIA SPLENDIDULA. (The Guinea Duyker.)

*Cephalophus grimmia*, var. 1, Gray, Cat. Ungul. B. M. p. 79.

Fur bright reddish yellow; nose with a black streak; underside of body white.

*Hab.* Coast of Guinea: St. Paul de Loanda.

A fine male in the Museum, presented by Edward Gabriel, Esq.

It is very difficult to refer the figures of these animals to the right species; but this species and the *G. irrorata* are distinguished from *G. nictitans* by the whiteness of the underside, which in that animal is pale yellow-brown; and the two other white-bellied species differ in the hair being punctulated or uniform—all characters very difficult to represent in small figures.

3. GRIMMIA IRRORATA. (The Natal Duyker.) (Skull, fig. 1, p. 591.)

*Cephalophus mergens*, var. *burchellii* (part.), Sundevall.

*Cephalophus grimmia*, Gray, P. Z. S. 1857, t. 57. f. 1; Knowsley, Menag. t. 1, 2. f. 3.

*Cephalophus campbelliæ* (part.), Gray, Cat. Ungul. p. 80.

*Antilope ocularis*, Peters, Reise nach Mossambique, Säugeth. t. 39 (male), t. 41. f. 1 (skull), t. 42. f. 1 (skull).

*Antilope altifrons* (part.), Peters, Mossambique, t. 37 (female only), t. 38. f. 2 (skull, female).

Fur greyish buff, beneath white. Male: fur paler; nose slightly black, varied. Female: fur grey, from the black tips of the hairs; nose with a decided black streak.

*Hab.* Natal.

There is in the Museum a male and female of this species, received from M. Sundevall as coming from Natal. I am now inclined to consider this quite distinct from *C. campbelliæ*, with which I have formerly united it.

The two animals (*Antilope ocularis*, male and its skull, and *A. altifrons*, female) figured in Dr. Peters's 'Mammalia of Mozambique' very much resemble the two specimens, the male and female, from Natal, in the British Museum—indeed, so much so, you might believe that they were drawn from the Natal specimens; but the skull, with the horns, which Dr. Peters figures as that of *A. altifrons* (male, t. 38. f. 1) appears to have the horns decumbent instead of ascending, and to have a very long compressed nose, which induces me to believe that it belongs to another species, very much like my *Cephalophus longiceps*. The figure of the skull of the male *C. ocularis* (t. 41. f. 1) differs in the shape of the impression in front of the orbit from that of the female *C. altifrons* (t. 38. f. 2), which leads me to believe they may be two species, as Dr. Peters has considered them; or it may be sexual, for it is very curious that Dr. Peters figures the same sexes as there are in the British Museum.

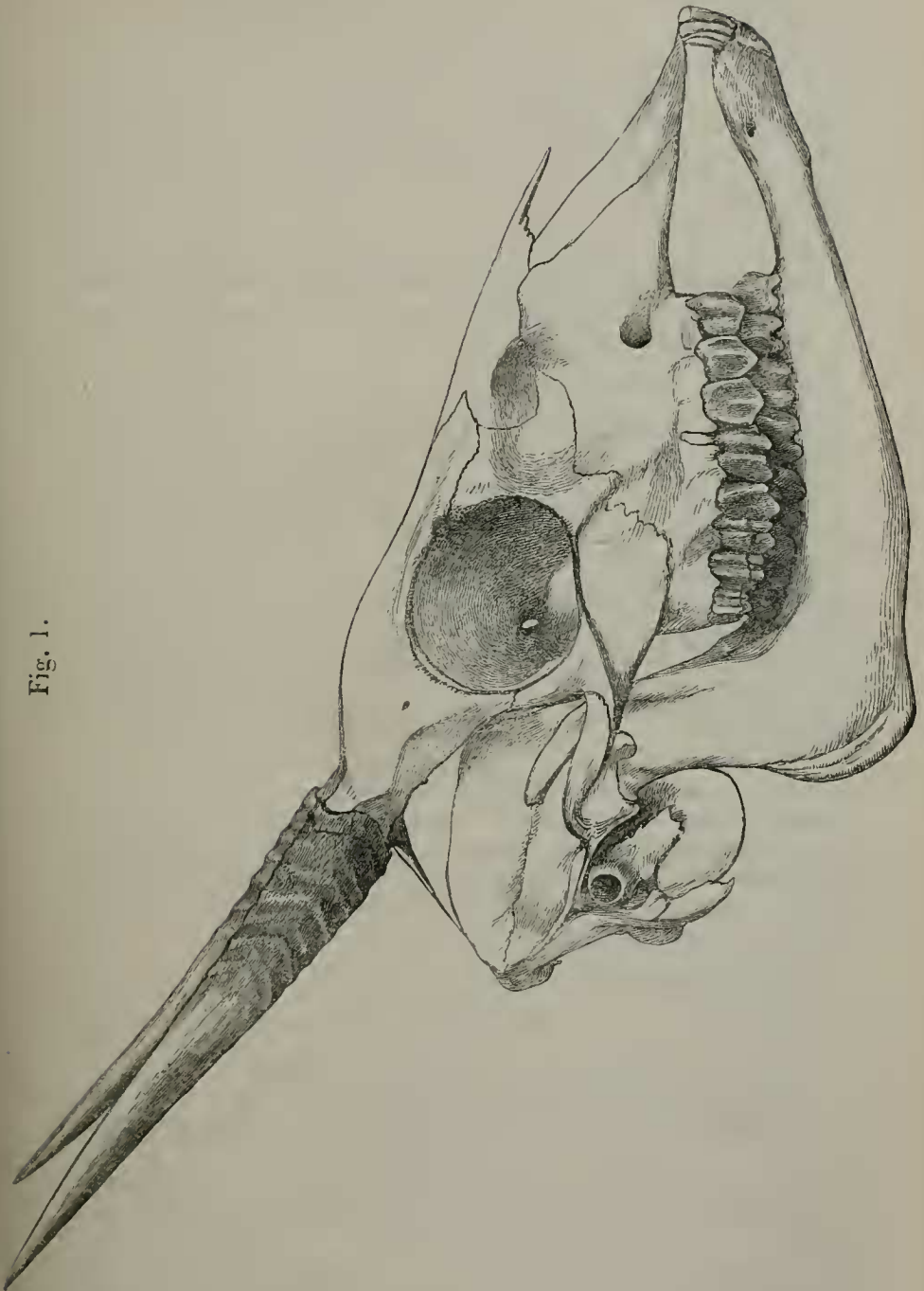


Fig. 1.

Skull of *Grimmia irrorata*, p. 590.

## 4. GRIMMIA CAMPBELLIIÆ. (The Sierra-Leone Duyker.)

*Cephalophus burchelli*, young (*A. campbelliæ*, Gray, MS.), Gray, Cat. Mamm. 1840, p. 162.

*Cephalophus campbelliæ*, Gray, Cat. Ungul. B. M. p. 80.

Fur grey-and-black grizzled, paler beneath; nose and forehead with an indistinct black streak.

*Hab.* Sierra Leone.

Only known from a young specimen. It appears very distinct from any of the preceding.

\*\* *Head elongate; skull elongate; suborbital pit very wide, shallow; nasal hole large, swelling out on the sides; horns shelving backwards.*

## 5. GRIMMIA BURCHELLII.

*Cephalophus burchellii*, Gray, Cat. Ungul. B. M. p. 81; P. Z. S. 1857, t. 57. f. 2; Bocage, Journ. de Ciencias, Lisboa, 1860, p. 222.

*Cephalophus grimmia (mergens)*, Knowsley Menag. t. 1, 2. f. 1 & 2.

Fur reddish brown; underside rather paler. Young dark reddish brown.

*Hab.* South Africa: Angola (*Bocage*).

There are four specimens in the British Museum; one, a male, has longer hair than the rest, and is probably of the winter season. It has frequently bred in the Society's Gardens.

One of the skulls in the Museum is the specimen described in Burchell's 'Travels' (vol. ii. p. 327), and which H. Smith named *A. burchellii*.

## 2. TERPONE.

Horns conical, strong, recurved nearly on the plane of the forehead. Ears —? Skull elongate; nose compressed, elongate; nasal bones oblong, scarcely broader behind; forehead flattish, on the same plane as the nose, not swollen (P. Z. S. 1865, p. 205, skull).

## TERPONE LONGICEPS.

*Cephalophus longiceps*, Gray, P. Z. S. 1865, p. 204, (f. of skull) p. 205.

*Cephalophus ruficrista*, Bocage, Mus. Lisbon, MS.

*Hab.* Gaboon (skull, B.M.); Angola (Mus. Lisbon).

Only known from a skull received, without a name, from M. du Chaillu.

The animal belonging to this skull has not been observed; and it is remarkable that a skull similar to it has been described by two others.

M. Barboza du Bocage, in the 'Jornal de Ciencias Mathematicas, Physicas e Naturaes, Lisboa,' Aug. 1869, p. 221, describes the head, covered with skin, of a specimen of *Cephalophus*, which he received from the interior of Angola, the skull of which is exactly like that



of my *C. longiceps* (P. Z. S. 1865, p. 205). The ears are moderate, rounded at the end, the outer surface covered with very short, close, deep-brown hairs, nearly naked within, except at the edge and end, which is bordered with short whitish hairs. Upper surface of the head pale brown, the nose deep brown, and forehead chocolate; the upper parts of the cheeks are grey-brown, the lower part and chin whitish; a narrow, dark-edged, yellow-brown ray above the eye, and an elongate spot of the same colour under the orbit. The crest is divided into a central and lateral portions. The central portion is bright red, the lateral ones of hairs of two lengths, the shorter dark brown, and the longer bright red.

He originally named this species *Cephalophus ruficrista*, but he has now changed it to *C. longiceps*.

b. *Antilope altifrons*, Peters, Mossambique, p. 184, t. 38. f. 1 (skull of male).

*Hab.* Mozambique (*Peters*).

I see M. Bocage refers this figure to this group (*l. c.* p. 221).

### 3. CEPHALOPHUS. (Bush-goats.)

Horns conical, recurved or ascending, short, and generally angular at the front of the base. Ears moderate, rounded at the end, covered with short hair. Skull short; forehead convex, swollen; nasal bones triangular, wide behind and narrow and acute in front; preorbital pit very large. (*Cat. Ungulata*, t. 10. f. 1 [*natalensis*], skull.)

Fur varies greatly in different specimens. In some it is thin and closely adpressed, formed of more or less flattened hairs, which, in *C. nigrifrons*, are very broad and tapering to a point. In some, with the adpressed fur, as *C. ogilbii*, *C. natalensis*, and *C. niger*, the cheeks and neck have only extremely short fine hair on them; others, as *C. nigrifrons*, have these parts covered with broad hairs like the body. Others are clothed with abundance of cylindrical hairs, varying in different degrees of softness; in some they are more bristly, as in *C. sylvicultrix*, in others soft, sometimes with a few bristly hairs intermingled, as in *C. pygmaeus*, *C. maxwellii*, and *C. melanorheus*. One species (*C. melanoprymnus*), which has a thick coat of moderately soft fur, has a crest of much longer hair extending along the whole length of the vertebral line, and a patch of softer hair over the base of the tail.

I have made some remarks on the differences between the skulls of the various species of this genus in the observations appended to the description of *C. longiceps* (P. Z. S. 1865, p. 255).

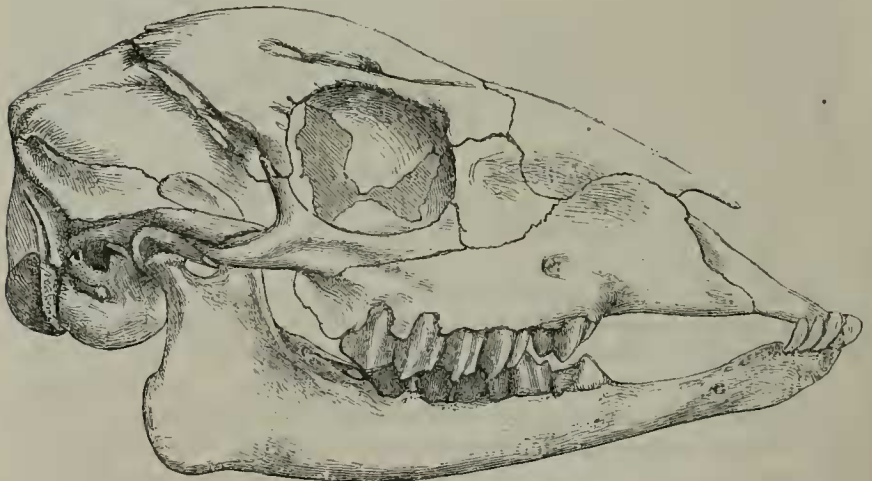
The specimens from Gaboon here described were purchased of M. du Chaillu. I do not find them mentioned in his published travels, nor in the list of animals which was published in America. Indeed in his journals he says there are no Antelopes found in that part of Africa; but perhaps he does not consider Bush-bucks Antelopes. I suppose they are common, as he used the skins with the imperfect skin of his *Potamochoerus albifrons* to stuff out the body of his *Tragelaphus albotittatus*, in the skin of which they were sewn up.

The skins have the fur in a pretty good state, the sheath of the horns being absent. The legs not having been skinned, but dried with the flesh on, are, in one or two cases, broken across at the knees, or rather wrist. The state of the legs and the skins, they having been soaked with a strong solution of corrosive sublimate, which usually makes them fall to pieces like wetted blotting-paper when they are damped, as is the case with several of the skins we purchased from him, will, I fear, prevent their being stuffed and arranged along with the other preserved specimens; but they are important additions to this family, of which we have such a complete collection in the Museum.

The species may be thus arranged for easy determination:—

- a. Back with a crest of long black hair. 1. *C. melanoprymnus*.  
 b. Back with a large yellow stripe. 2. *C. sylvicultrix*.  
 c. Back with a black dorsal streak. 3. *C. ogillii*; 4. *C. badius*;  
 5. *C. rufilatus*.  
 d. Back with a black saddle. 6. *C. dorsalis*.  
 e. Back uniform  
 \* Black. 7. *C. niger*.  
 \*\* Red. 8. *C. natalensis*; 9. *C. nigrifrons*.  
 \*\*\* Yellow. 10. *C. madoqua*; 11. *C. coronatus*; 12. *C. whitfieldii*.  
 \*\*\*\* Blackish grey, with pale streak over the eye. 13. *C. pygmaeus*; 14. *C. maxwellii*; 15. *C. melanorheus*.  
 \*\*\*\*\* Brown punctulated. 16. *C. punctulatus*; 17. *C. color*.

Fig. 2.



Skull of *Cephalophus melanoprymnus*.

1. CEPHALOPHUS MELANOPRYMNUM. (Plate XLIV.)

Fur rather long and soft, grizzled by the subterminal white rings



J Smit lith

CEPHALOPHUS MELANOPYMNUS

M & N Hansbairt imp





on the dark-brown hairs; of outside of limbs, and especially of the middle of the back, longer (forming a vertebral crest), scarcely grizzled; rump with a large oval disk of black hair; legs dark brown; ears moderate, hairy.

*Hab.* Gaboon.

Fig. 3.



Nasal bone of *Cephalophus melanopymnus*.

Female in British Museum. Differs from *C. sylvicultrix* and *C. niger* in having the very distinct black patch over the base of the tail, and also in the much greater length and softness of the fur. The fur of *C. sylvicultrix* is slightly grizzled.

2. CEPHALOPHUS SYLVICULTRIX. (Fig. 4, p. 596.)

*Cephalophus sylvicultrix*, Gray, Cat. Ungul. B. M. p. 83; Knowsley Menag. t. 8. f. 1, t. 23. f. 3.

Fur bristly, rather long, blackish brown, grey-grizzled, with a large yellow spot on the hinder part of the back.

*Hab.* West Africa: Sierra Leone.

Length of skull of adult male  $10\frac{3}{4}$  inches; height at occiput  $2\frac{1}{2}$ ; width at condyles  $4\frac{3}{4}$ , at nasals  $4\frac{1}{2}$ , from orbit to end of intermaxillaries 6 inches.

3. CEPHALOPHUS OGILBII, Gray, Cat. Ungul. B. M. p. 83; Knowsley Menag. t. 8. f. 2.

Fur rigid, adpressed; hairs of cheeks and neck very short, of forehead long, pale bay-brown, with a deep-black dorsal streak, paler beneath; crown and haunches brighter bay.

*Hab.* Fernando Po; Gaboon.

B.M.

Two males in the British Museum, one from Fernando Po, the other from the Gaboon. The latter is brighter bay, and has a rather wider dorsal streak.

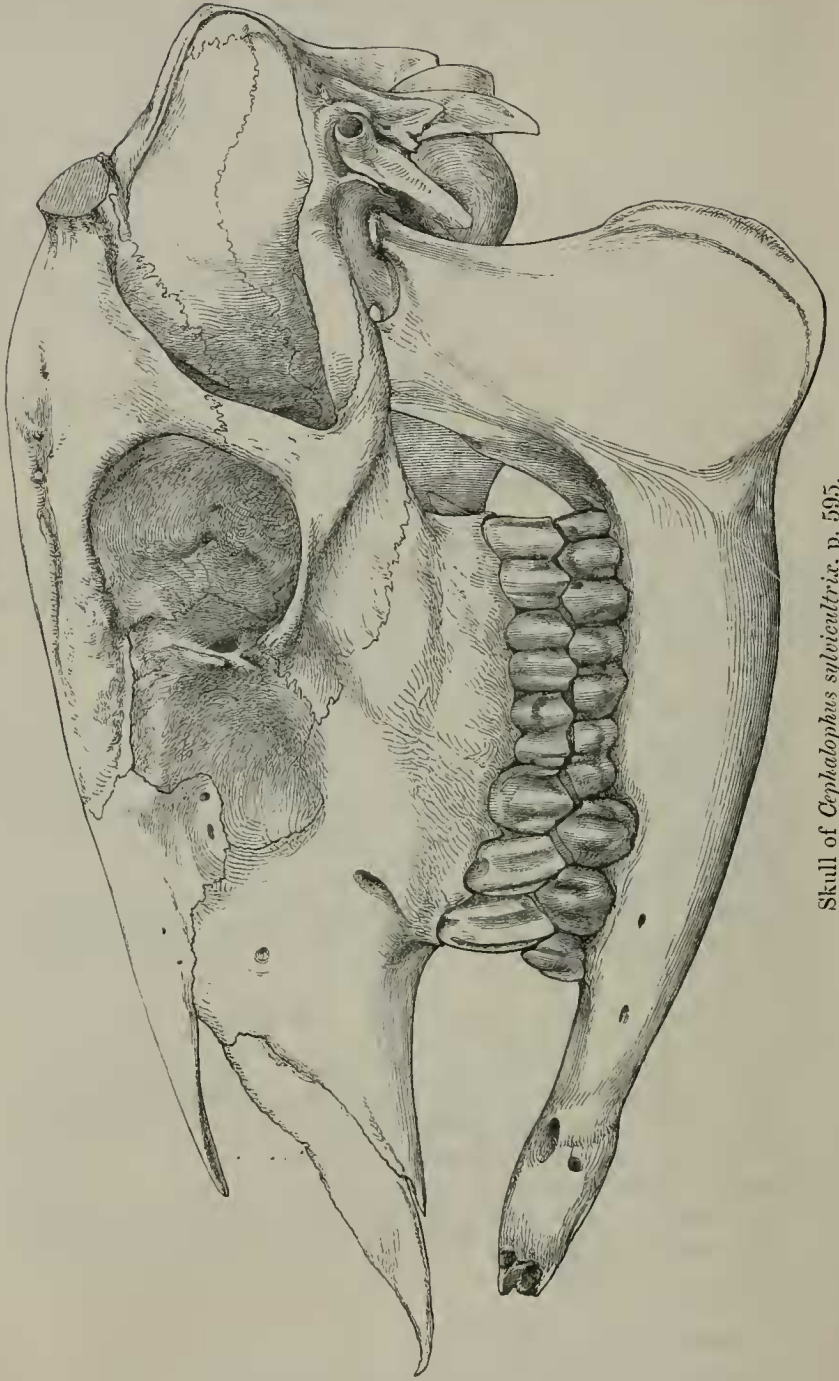
4. CEPHALOPHUS BADIUS.

*Cephalophus badius*, Gray, Cat. Ungul. B. M. p. 84.

*Cephalophus dorsalis*, Gray, Knowsley Menag. t. 7. f. 1.

*Cephalophus breviceps*, Gray, P. Z. S. 1866, p. 201, t. 2 (junior).

Fig. 4.



Skull of *Cephalophus sylvicultrix*, p. 595.



J. Smeat lith.

M & N Harbart imp

CEPHALOPHUS DORSALIS





Fur rigid, adpressed, bright yellowish brown; crown and nape with a broad well-defined black dorsal streak.

*Hab.* West Africa: Sierra Leone.

The young animal described as *C. breviceps* assumed all the appearance, as it grew older, of *C. badius*.

Fig. 5.



Skull of *Cephalophus rufilatus*.

#### 5. CEPHALOPHUS RUFILATUS.

*Cephalophus rufilatus*, Gray, Cat. Ungul. B. M. p. 85; Knowsley Menag. t. 6 (7). f. 3, t. 9 & 9<sup>a</sup>.

Fur rather rigid, dark reddish bay; a dark, broad, reddish streak on the middle of the back; nose blackish grey.

*Hab.* West Africa: Gambia; Senegal.

Skull, length  $5\frac{1}{4}$ ; height at occiput  $2\frac{1}{4}$ ; length of nasals  $1\frac{1}{2}$ ; from orbit to end of maxillary  $2\frac{5}{8}$ ; width at zygomatic arch  $2\frac{1}{2}$  inches.

#### 6. CEPHALOPHUS DORSALIS. (Plate XLV.)

*Cephalophus dorsalis*, Gray, Cat. Ungul. B. M. p. 84.

Fur rather rigid, adpressed, dark bay; legs darker; crown, nape, upper part of shoulders, middle of the back, and tail black, beneath paler; fur of head and neck rather elongate.

*Hab.* Sierra Leone.

This appears to be a large species when full-grown, much larger than *C. badius*, and very different in having long hair round the head and on the neck.

#### 7. CEPHALOPHUS NIGER.

*Cephalophus niger*, Gray, Cat. Ungul. B. M. p. 84; Knowsley Menag. t. 7. f. 2.

Fur rigid, adpressed; hair of cheeks and neck very short, sooty black; front part of body greyer.

*Hab.* Guinea.

A half-grown male in the Museum from the Leyden Museum.

#### 8. CEPHALOPHUS NATALENSIS.

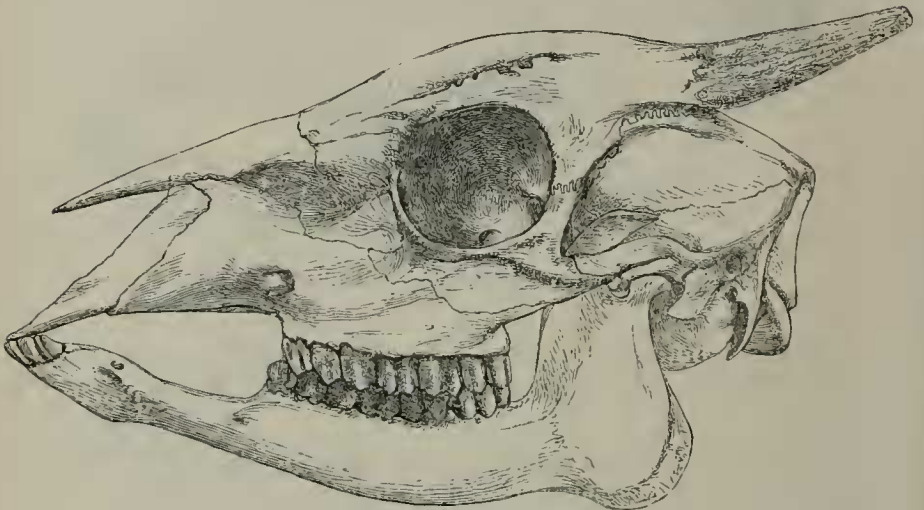
*Cephalophus natalensis*, Gray, Cat. Ungul. B. M. p. 85, t. 10. f. 1 (skull); Smith, Zool. S. Africa, t. 32.

Hair rigid, adpressed, of neck and cheeks short, of forehead long, bright red-bay; beneath pale yellowish; forehead red.

*Hab.* Port Natal.

There are four specimens in the British Museum, two males and two females.

Fig. 6.



Skull of *Cephalophus nigrifrons*.

#### 9. CEPHALOPHUS NIGRIFRONS. (Platc XLVI.)

Head, neck, and body, above and below, covered with broad, tapering, rigid, bright bay hairs; nose, forehead, and crown between the horns with black rigid hairs, and a few black hairs interspersed on the nape and shoulders; outside of fore legs blackish; hoofs narrow, rather elongate.

*Hab.* Gaboon.

Somewhat like *C. badius* in colour, but much brighter, has no dorsal streak; differs from *C. natalensis* in the black forehead and tail and dark fore legs, and the hair is much more rigid.

#### 10. CEPHALOPHUS MADOQUA.

*Cephalophus madoqua*, Gray, Cat. Ungul. B. M. p. 82; Rüppell, Faun. Abyss. t. 7. f. 2.



J. Smith del.

CEPHALOPHUS NIGRIFRONS

M & N Hartnoll imp.

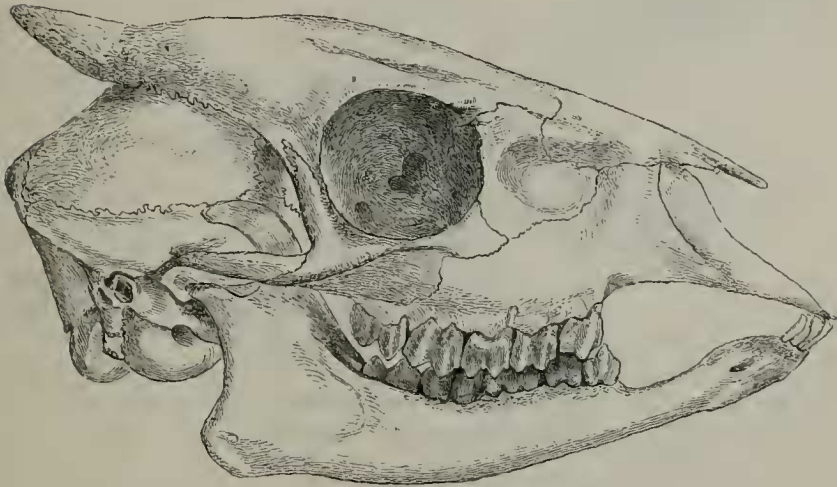




Fur rigid, close-pressed, yellowish brown, slightly punctulated with black; forehead reddish.

*Hab.* Abyssinia.

Fig. 7.



Skull of *Cephalophus coronatus*.

#### 11. CEPHALOPHUS CORONATUS.

*Cephalophus coronatus*, Gray, Cat. Ungul. B. M. p. 82; Knowsley Menag. t. 6 (7). f. 1, 2.

Fur rather soft, pale yellowish brown; back and front of legs with a few scattered black hairs; beneath whitish; ears rather long.

*Hab.* West Africa: Gambia.

Length of skull  $5\frac{3}{4}$ ; height at occiput  $2\frac{3}{4}$ ; width at condyles  $2\frac{5}{8}$ ; length from orbit to end of maxillary  $2\frac{2}{3}$ ; length of nasals  $1\frac{7}{8}$  inches.

#### 12. CEPHALOPHUS WHITFIELDII.

*Cephalophus whitfieldii*, Gray, Cat. Ungul. B. M. p. 88; Knowsley Menag. t. 11. f. 2.

Fur soft, yellowish ash; shoulders, outside of limbs, and hind part of back rather darker; hair ashy grey, brown at the ends, with yellow tips.

*Hab.* West Africa: Gambia.

B.M.

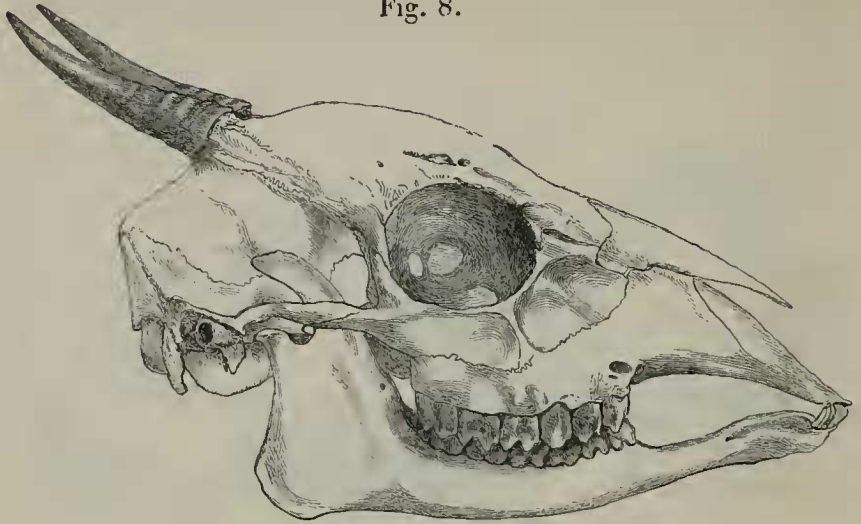
#### 13. CEPHALOPHUS PYGMEUS.

*Cephalophus pygmeus*, Gray, Cat. Ungul. B. M. p. 87; Harris, Wild Anim. S. Africa, t. 26.

Fur soft, grey-brown, with intermixed rather rigid black hairs; beneath white; streak over eye and outer part of thighs rufous.

*Hab.* South Africa: Cape of Good Hope; Angola? (*Bocage*).

Fig. 8.

Skull of *Cephalophus maxwellii*.

## 14. CEPHALOPHUS MAXWELLII.

*Cephalophus maxwellii*, Gray, Cat. Ungul. B. M. p. 86; Knowsley Menag. t. 11<sup>a</sup>.

*Guevi*, F. Cuv. Mamm. Lithog. t.

Fur rather soft, uniform, thick, grey-brown or sooty black; beneath whitish grey; a broad streak over the eyes yellowish white.

*Hab.* West Africa: Senegal, Gambia, and Sierra Leone; Angola (*Bocage*).

Skull of adult male: length 5 inches; height at occiput  $2\frac{1}{4}$ ; width of zygoma  $2\frac{1}{2}$ ; length of nose from orbit  $2\frac{1}{2}$ ; length of nasals  $1\frac{3}{4}$  inch.

## 15. CEPHALOPHUS MELANORHEUS.

*Cephalophus melanorheus*, Gray, Cat. Ungul. B. M. p. 88; Knowsley Menag. t. 10.

Fur soft, with intermixed rather rigid black hairs, grey-brown; beneath white; rump and upper part of tail black.

*Hab.* West Africa: Fernando Po (*Thomson*); Gaboon (B.M.); East Africa (*Kirk*).

## 16. CEPHALOPHUS PUNCTULATUS.

*Cephalophus punctulatus*, Gray, Cat. Ungul. B. M. p. 88; Knowsley Menag. t. 11. f. 1.

Fur soft, dark fulvous brown; beneath white; hair grey, with brown ends and a yellow subterminal ring.

*Hab.* West Africa: Sierra Leone (*Sabine*).

B.M.

## 17. CEPHALOPHUS BICOLOR.

*Cephalophus bicolor*, Gray, P. Z. S. 1862, p. 263, t. 34.

Fur soft, brown; nose, forehead, inside of ears, chin, and under-side of body, rump, and tail white.

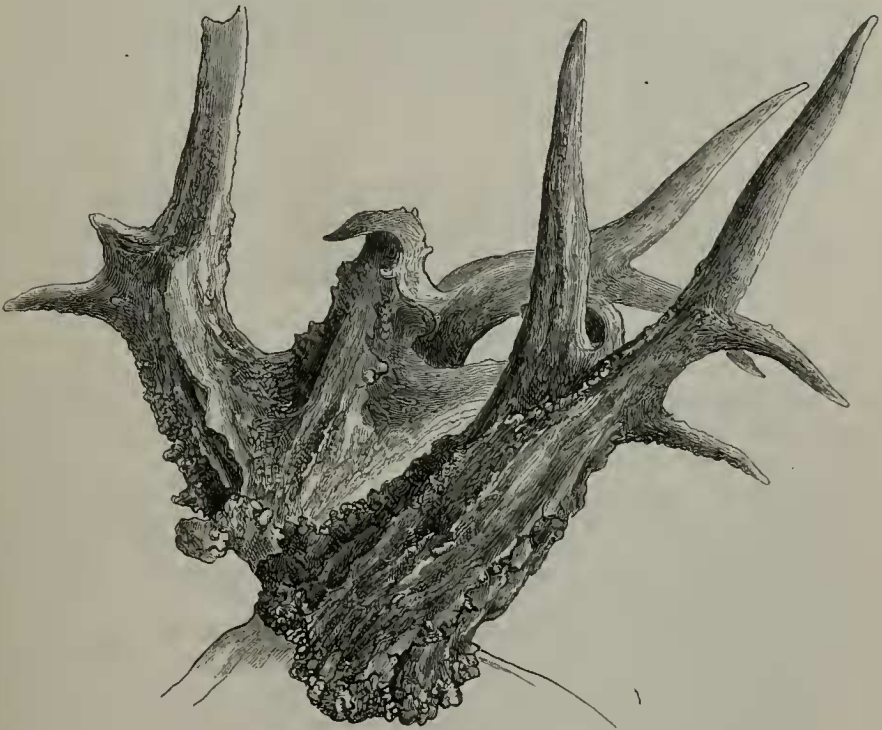
*Hab.* South Africa: Natal.

One hind leg is white (but that may be a sport; indeed the whole white may be an accidental variation); but in the general colour of the fur it is quite distinct from any other known Bush-buck. It is said to be nearly adult, though so small.

## 9. Notes on the Skull of a Roebuck in the British Museum. By DR. J. E. GRAY, F.R.S.

[Received June 5, 1871.]

In the British Museum there is a skull (no. 688, *o*) which has been considered that of a Roebuck with very much deformed horns. It was received from the Museum of this Society, without any history or habitat. At first sight the horns have some resemblance to



Supposed horns of a Roebuck.

those of *Xenelaphus leucotis*, and, like it, on the two sides are very different; but in *Xenelaphus* the peculiar projection is from the back of the base of the horns, and here it is an extreme development

of a snag from the front of the base of the horns, which is three-lobed at the end, two smaller lobes being directed forward and much below the erect tip.

The right horn resembles that of a much developed, but rather irregularly divided form of those of a Roebuck, with very thick and very deep longitudinal grooves, having high ridges, nodulous on the edges, occupying the whole length of the main beam to the burr, just above which they are largest and deepest; and it has on the inner side of the first furcation a thick, short, recurved snag.

The left horn is like the other, but much thicker at the base; the recurved snag on the inner side is much longer and more slender; but the usual anterior snag of this furcation is reduced to a very small conical prominence; and what seems to be equivalent to the hinder lower snag of the other horn is a dilated flattened process at the base, divided into two slender, unequal lobes at the top. But the great peculiarity of this horn is the existence of a branch springing from the front of the base of the main beam, about half as large as the horn itself, and having two conical divergent snags on the front part of the middle of its length.

Daubenton, in Buffon's 'Nat. Hist.' vol. vi. p. 241, t. 36. f. 2, 3, 4, figures three malformations of the horns of the Roebuck, but does not represent any like the one described from the specimen in the British Museum.

## 10. On the Birds of Cameroons, Western Africa.

By R. B. SHARPE, F.L.S. &c., Librarian to the Society.

[Received June 6, 1871.]

(Plate XLVII.)

After having quitted the field of his former labours in Madagascar, Mr. Crossley undertook an expedition to Cameroons, at the instance of Mr. Ward, of Halifax, to whom ornithologists are greatly indebted for having sent out such an indefatigable collector to so interesting a locality. As in the case of all his former collections, the specimens are admirably preserved by Mr. Crossley, who in this respect does great credit to Mr. Cutter, his agent, who trained him in preparing specimens of natural history.

The avifauna of Cameroons always possessed great attractions for me, inasmuch as I was anxious to obtain some idea of the birds of this part of Africa, believing that, from the mountainous nature of Gaboon and Fantee, which so closely assimilate to each other, might be expected. The result, however, proves that in its general features the avifauna of Cameroons is precisely similar to that of the two last-named countries. The proving of this fact is of great interest, as previously we were totally unacquainted with the birds



of Cameroons, the bad character of the natives doubtless deterring collectors from paying the place a visit. Mr. Crossley has suffered much from their unwillingness to work, no inducement being sufficient to make them take the least trouble about any thing, and their profound laziness rendering it necessary to carry all his own collections himself from the mountains to the coast.

Beyond the record of some new birds sent by Captain Burton, and described by Mr. G. R. Gray in the 'Annals of Natural History' for 1862 (3rd series, vol. x. p. 443), and the names of a few species given in my catalogue, for which I had been indebted to Mr. Cutter, nothing whatever had been done in the way of collecting in the present locality.

In this paper the nomenclature employed is principally that used in my 'Catalogue of African Birds.'

### Order PICARIÆ.

#### Fam. ALCEDINIDÆ.

##### 1. CERYLE RUDIS.

*Ceryle rudis* (L.); Sharpe, Cat. Afr. B. p. 6.

Two specimens are sent by Mr. Crossley, killed on the 4th and 14th of February respectively. I had already received it from Cameroons in spirits through Mr. Cutter (*cf.* Cat. *l. c.*).

##### 2. ALCEDO QUADRIBRACHYS.

*Alcedo quadribrachys*, Bp.; Sharpe, Cat. Afr. B. p. 6.

One beautiful specimen, killed on the 2nd of January, 1871. Previously received in spirits from Mr. Cutter.

##### 3. ISPIDINA PICTA.

*Ispidina picta* (Bodd.); Sharpe, Cat. Afr. B. p. 7.

One specimen.

##### 4. HALCYON DRYAS.

*Halcyon dryas*, Hartl.; Sharpe, Cat. Afr. B. p. 8.

Two specimens, killed on the 30th of November, 1870. It is doubtful whether the specimen already received by me through Mr. Cutter, and recorded as *H. malimbica* (*l. c.* p. 8) is not really of the present species; but there is a little difficulty in settling the point, owing to the birds having been preserved in spirit.

##### 5. HALCYON CYANOLEUCA.

*Halcyon cyanoleuca* (V.); Sharpe, Cat. Afr. B. p. 8.

One specimen, killed on the 20th of January, 1871.

##### 6. HALCYON SENEGALENSIS.

*Halcyon senegalensis* (L.); Sharpe, Cat. Afr. B. p. 8.

One example, obtained on the 26th of January, 1871.

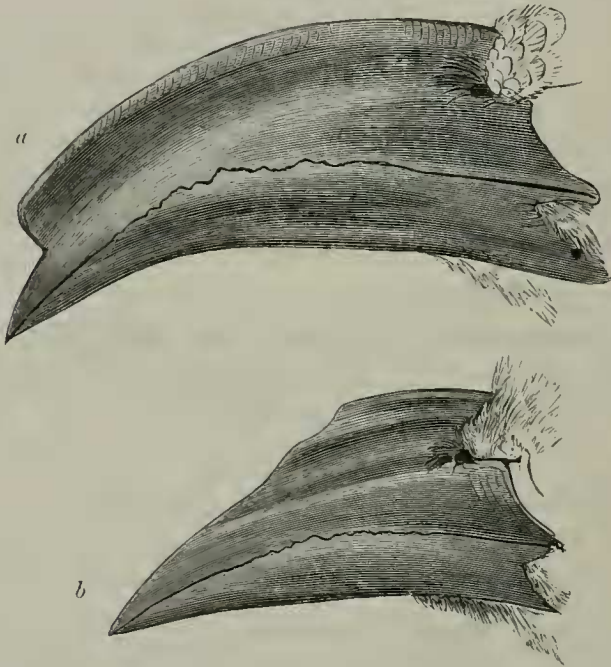
## Fam. BUCEROTIDÆ.

## 7. BERENICORNIS ALBOCRISTATUS.

*Berenicornis albo cristata*, Cass. Journ. Acad. Philad. i. pl. xv.

Three specimens. I must remark that all the specimens received from Fantee differ conspicuously in being much smaller, and in having the wing scarcely tipped with white. The bill also is very different, being much smaller in the Fantee bird. Although I have a good series of these Hornbills, I must wait for further evidence before describing the Fantee bird as new, as Cassin's original type came from Sierra Leone, and agrees with the Gaboon bird and not with that from Fantee, as one would expect. The accompanying figure illustrates the differences in the Hornbills from the two localities.

Fig. 1.



Bill of *Berenicornis albo cristatus*. *a*, from Cameroons; *b*, from Fantee.

## 8. TOCKUS PULCHRIROSTRIS.

*Tockus pulchrirostris* (Schl.); Sharpe, Cat. Afr. B. p. 9.

“Cameroon Mountains, February 4th, 1871. Eye-ring grey; eyeball black.”

As far as I can see, the single specimen sent by Mr. Crossley is inseparable from Fantee examples in my collection.

## Fam. MUSOPHAGIDÆ.

## 9. TURACUS CRISTATUS.

*Turacus cristatus* (V.); Sharpe, Cat. Afr. B. p. 10.

A single specimen in good plumage. This fine species seems to occur in suitable localities from Sierra Leone down to Angola.

10. CORYTHAIX PERSA.

*Corythaix persa* (L.); Sharpe, Cat. Afr. B. p. 11.

Five specimens sent by Mr. Crossley, procured by him between the 24th of January and the 15th of February.

11. CORYTHAIX MERIANI.

*Corythaix meriani*, Rüpp.; Hartl. Orn. W. Afr. p. 157.

This is a beautiful species, easily distinguished from the other members of the genus by its conspicuous magenta-tipped crest. Mr. Crossley has sent one specimen, which he killed on February 1st, 1871.

Fam. CUCULIDÆ.

12. CHRYSOCOCCYX CLAASII.

*Chrysococcyx claasii* (V.); Sharpe, Cat. Afr. B. p. 13.

One specimen, shot on the 2nd of February, 1871.

13. CHRYSOCOCCYX CUPREUS.

*Chrysococcyx cupreus* (Bodd.); Sharpe, Cat. Afr. B. p. 13.

A single specimen, obtained on the 16th of February, 1871.

14. CHRYSOCOCCYX SMARAGDINEUS.

*Chrysococcyx smaragdineus* (Sw.); Sharpe, Cat. Afr. B. p. 13.

A beautiful specimen, killed on the 10th of February, 1871.

15. ZANCLOSTOMA FLAVIROSTRIS.

*Zanclostoma flavirostris* (Sw.); Sharpe, Cat. Afr. B. p. 14.

“Cameroons Mountains, January 21st, 1871. Eye-ring red; eye-ball black.

“Victoria Forest.”

Fam. CAPITONIDÆ.

16. TRICHOLEMMA HIRSUTA.

*Tricholæma hirsuta* (Sw.); Sharpe, Cat. Afr. B. p. 15.

Two young specimens, obtained on the 22nd and 25th of February, 1871. These birds are much younger than the example figured in the plate of this species given by the Messrs. Marshall in their ‘Monograph of the Capitonidæ;’ and as this stage of plumage has never been described, I add a short diagnosis:—

Head black; rest of the upper surface of the body brown, everywhere spotted with little golden-yellow markings, more thickly on the crown; wing-coverts exactly like the back; quills and tail very dark brown, edged with golden yellow; upper tail-coverts blackish, rather conspicuously edged with golden yellow; feathers round the eye and ear-coverts blackish, spotted with silvery white; cheeks and

sides of the neck white, mottled with black; throat whitish, with longitudinal black markings down the centre of each feather; rest of the under surface of the body dull golden yellow, the upper part of the breast streaked with black, the rest of the belly and abdomen thickly marked with brown transverse spots. Total length 7·4 inches, culmen 1, wing 3·6, tail 2·1, tarsus ·8.

I am now, therefore, able to state that the immature bird figured in the plate of Messrs. Marshalls' work is very nearly adult, the only remains of young plumage being the whitish throat.

17. XYLOBUCCO DUCHAILLUI.

*Xylobucco duchailloi* (Cass.); Sharpe, Cat. Afr. B. p. 15.

One specimen, shot on the 4th of February, 1871.

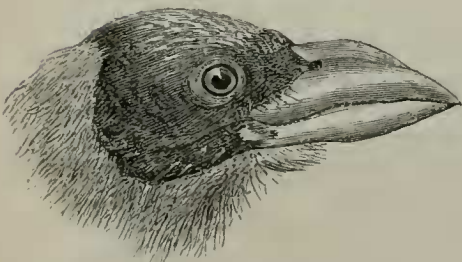
18. GYMNBUCCO PELI.

*Gymnobucco peli*, Hartl. Orn. W. Afr. p. 175.

One specimen, shot on the 4th of February, 1871. The Messrs. Marshall in their 'Monograph' have united *G. peli* to *G. calvus*. But I am not quite satisfied about this identification; for it must be remembered that Dr. Hartlaub, in his original description of *G. peli*, distinctly described both male and female as having the tufts on each side of the forehead. The Messrs. Marshall, on the other hand, consider that the female is to be distinguished from the male by the absence of these tufts on the forehead. Having lately received from Fantee a fine series of these Bald-headed Barbets, I must say that I am not clear in my mind about the two birds being only sexes of one and the same species; for those birds supposed to be the female (i. e. *G. calvus*) have much larger bills than the supposed males (*G. peli*). The sketches which I now exhibit (figs. 2 & 3) show the differences between the two species; and it will be observed that in *G. calvus* there is a conspicuous tuft of brush-like feathers on the chin, which scarcely exists in *G. peli*.

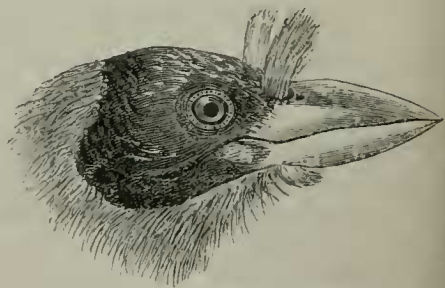
At present, therefore, I consider the two species to be distinct.

Fig. 2.



Head of *Gymnobucco calvus*.

Fig. 3.



Head of *Gymnobucco peli*.

19. TRACHYPHONUS PURPURATUS.

*Trachyphonus purpuratus*, Verr.; Marsh. Monogr. Capit. p. xxxii.



A beautiful specimen, killed on the 10th of February, 1871. This is identical with the true *T. purpuratus* of Gaboon, and is not *T. goffini*, which takes its place on the Gold Coast.

Fam. PICIDÆ.

20. *CAMPETHERA NIVOSA.*

*Campethera nivosa* (Sw.) ; Sharpe, Cat. Afr. B. p. 17.

“Cameroons Mountains, February 4th, 1871.”

One female sent, identical with examples in my collection from Fantee.

Order PASSERES.

Fam. TIMALIIDÆ.

21. *ALETHE CASTANEA.*

*Alethe castanea*, Cass. Proc. Philad. Acad. 1859, p. 43.

“Cameroons Mountains, February 1st, 1871, and February 20th, 1871.”

The two specimens sent by Mr. Crossley are an adult and a young bird of this species. Compared with a bird from Gaboon in my collection, obtained by Du Chaillu, Mr. Crossley’s older specimen is rather larger, but is apparently a little more adult.

The species of *Alethe* may be characterized as follows :—

*Clavis specierum generis Alethes.*

- |   |    |                              |
|---|----|------------------------------|
| <i>a.</i> capite summo late castaneo.                     |    |                              |
| <i>a'</i> . cauda brunnea unicolori .....                 | 1. | <i>castanea</i> , Cass.      |
| <i>b'</i> . rectricibus exterioribus ad apicem albis..... | 2. | <i>maculicauda</i> , Hartl.  |
| <i>b.</i> capite cinerascete .....                        | 3. | <i>castanonota</i> , Sharpe. |

Fam. TURDIDÆ.

22. *TURDUS CROSSLEYI*, sp. nov. (Plate XLVII.)

*T. supra olivaceo-brunneus, aurato lavatus, pileo uropygioque conspicue tinctis : collo postico et corpore subtus late aurantiacis : abdomine medio et imo cum crisso pure albis : mento, genis et regione auriculari antica nigricantibus : tetricibus alarum saturate brunneis, minimis aurato lavatis, majoribus conspicue albo terminatis, fasciam duplicem alarem formantibus : rectricibus brunneis extus aurato lavatis, versus basin albis : cauda saturate brunnea vix aurato nitente : rostro nigro ; pedibus pallide flavidis : long. tot. 8·5, culm. 0·9, alæ 3, caudæ 2·9, tarsi 1·2.*

Head golden brown, tinged with orange on the hinder part ; a little line of feathers on each side of the forehead, at the base of the bill, orange ; lores, fore part of the cheeks, and ear-coverts blackish ; sides of the neck, and a collar encircling the same, orange ; back golden brown ; least wing-coverts blackish, strongly washed with golden brown ; rest of the wing-coverts blackish brown, conspicuously

tipped with white, forming a double alar band; primary coverts blackish brown, not spotted; quills rather paler brown, white at the base of the inner web; the outer web of the primaries golden brown, of the secondaries olive-brown; tail dark brown, slightly inclining to reddish and tinged with golden brown; under surface of the body rich orange; the chin blackish; centre of the breast, abdomen, and under tail-coverts pure white; under wing-coverts white, the bases of the wings blackish; bill black; feet pale yellowish. Total length 8·5 inches, culmen 0·9, wing 3, tail 2·9, tarsus 1·2.

This new species is very closely allied to *Turdus gurneyi*, Hartl. (Ibis, 1864, pl. ix.), from Natal, but is at once distinguished by its black cheeks, lores, and chin, as well as by its orange collar round the neck.

### 23. CRINIGER CALURUS.

*Criniger calurus*, Cass.; Sharpe, Cat. Afr. B. p. 21.

“Cameroons Mountains, January 19th, 1871.”

“Cameroons Mountains, February 7th, 1871. Eye-ring reddish brown; eyeball black.”

Both the above specimens agree with typical Gaboon examples in my collection. In Fantee and to the north this species is replaced by *C. verreauxi*, which is the name I proposed in my catalogue for the *C. gularis* (Sw. *nec* Horsf.) = *C. tephrogenys*, Jard. *apud* Finsch, J. f. O. 1867, p. 26, et Sharpe, Ibis, p. 472 (*nec* Jard. & Selby, Contr. to Orn. pl. 127). Shortly after writing my last paper on the Ornithology of Fantee (*l. c.*) I sent a specimen of the African *Criniger gularis* to Sir William Jardine, asking him to compare it with the type of his *C. tephrogenys*, and to see if the two birds were identical. In due time I received a letter from him, assuring me that they were perfectly distinct (as, indeed, any one would have imagined from the descriptions) and detailing the differences. I therefore proposed the name of *C. verreauxii* for the African bird.

### 24. CRINIGER TRICOLOR.

*Criniger tricolor* (Cass.); Sharpe, Cat. Afr. B. p. 21.

“Cameroons Mountains, January 1st, 1871.”

Agrees exactly with specimens from Gaboon.

### 25. CRINIGER CHLORONOTUS.

*Criniger chloronotus*, Cass.; Finsch, Journ. f. Orn. 1867, p. 24.

“Cameroons Mountains, February 25th, 1871.”

Two specimens, agreeing exactly with a typical specimen in my collection from Gaboon obtained by Du Chaillu.

### 26. CRINIGER NIVOSUS.

*Criniger nivosus*, Temm.; Sharpe, Cat. Afr. B. p. 22.

“Cameroons Mountains, February 1st and 9th. Eye-ring brown; eyeball black.”

The two specimens sent by Mr. Crossley agree best with Fantee



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birds in my collection. Examples from this latter locality slightly incline to grey on the head, while specimens from Gaboon are more grey; but I have no doubt these slight variations are due to age or the season of the year.

27. *ANDROPADUS VIRENS*.

*Andropadus virens* (Cass.); Sharpe, Cat. Afr. B. p. 23.

"Cameroons Mountains. Sings nicely. Bill black; iris brown."

28. *IXONOTUS GUTTATUS*.

*Ixonotus guttatus*, Verr.; Sharpe, Cat. Afr. B. p. 41.

"Cameroons Mountains, January 28th and February 11th, 1871. Iris yellow."

Exactly similar to Gaboon specimens in general characters, but perhaps more tinged with brown on the back of the neck.

29. *COSSYPHA POENSIS*.

*Cossypha poensis*, Strickl.; Sharpe, Cat. Afr. B. p. 25.

"Cameroons Mountains, February 11th and 20th, 1871."

These two specimens sent by Mr. Crossley are precisely similar to a Fantee skin in my collection.

Fam. NECTARINIIDÆ.

30. *NECTARINIA SUPERBA*.

*Nectarinia superba* (V.); Sharpe, Cat. Afr. B. p. 38.

"Cameroons Mountains, February 18th, 1871."

31. *NECTARINIA FULIGINOSA*.

*Nectarinia fuliginosa* (Shaw); Sharpe, Cat. Afr. B. p. 39.

"Victoria Forest, January 7th, 1871."

"Cameroons Mountains, January 18th, 1871."

32. *NECTARINIA ANGOLENSIS*.

*Nectarinia angolensis* (Less.); Sharpe, Cat. Afr. B. p. 39.

"Cameroons Mountains, January 26th, 1871."

33. *NECTARINIA CHLOROPYGIA*.

*Nectarinia chloropygia*, Jard.; Sharpe, Cat. Afr. B. p. 39.

"Cameroons Mountains, February 2nd and 15th, 1871."

34. *NECTARINIA SUBCOLLARIS*.

*Nectarinia subcollaris*, Reich.; Sharpe, Cat. Afr. B. p. 41.

"Cameroons Mountains, February 9th, 1871."

35. *ANTHREPTES AURANTIA*.

*Anthreptes aurantia*, Verr.; Sharpe, Cat. Afr. B. p. 41.

"Victoria Forest, January 31st, 1871."

Mr. Crossley has sent a male of this lovely bird, which agrees exactly with one of the type specimens in my collection, given to me by my good friend M. Jules Verreaux himself.

Fam. MUSCICAPIDÆ.

36. *BIAS MUSICUS*.

*Bias musicus* (V.); Sharpe, Cat. Afr. B. p. 43.

"Cameroons Mountains, February 23rd, 1871."

A male in full plumage. *Megabias* seems to me to be scarcely generically separable.

37. *PLATYSTEIRA LEUCOPYGIALIS*.

*Platysteira leucopygialis*, Fras.; Sharpe, Cat. Afr. B. p. 43.

"Eye blue."

Mr. Crossley has sent several specimens of this bird, procured on the Cameroons Mountains, between the 18th of January and the 27th of February.

38. *PLATYSTEIRA CYANEA*.

*Platysteira cyanea* (Müll.); Sharpe, Cat. Afr. B. p. 44.

An old male, and a young male just throwing off the plumage of the adult female.

39. *TERPSIPHONE TRICOLOR*.

*Terpsiphone tricolor* (Fras.); Hartl. Orn. W. Afr. p. 44.

Mr. Crossley has sent a fine series of this Flycatcher, procured between the 21st of January and the 5th of February, 1871.

40. *TERPSIPHONE MELAMPYRA*.

*Terpsiphone melampyra* (Verr.); Sharpe, Cat. Afr. B. p. 44.

Two specimens procured on the Cameroons Mountains on the 16th of February, 1871. This species appears to me to be clearly characterized, the absence of white on the wing being the distinguishing peculiarity. I have a fine specimen in my collection from Gaboon.

Fam. HIRUNDINIDÆ.

41. *PSALIDOPROCNE NITENS*.

*Psalidoprocne nitens* (Cass.); Sharpe, P. Z. S. 1870, p. 291.

"Cameroons Mountains, January 16th, 1871."

Until recently this species was known only from Gaboon, where it was discovered by Du Chaillu, one of whose original specimens is now in my collection. Governor Ussher has lately sent it from Fantee, and the discovery of the bird in Cameroons shows that it is found in all the countries round the Bight of Biafra.

## Fam. LANIIDÆ.

## 42. DRYOSCOPIUS LEUCORHYNCHUS.

*Dryoscopus leucorhynchus*, Hartl. ; Sharpe, Cat. Afr. B. p. 47.

“Cameroons Mountains, February 1st and March 8th, 1871. Iris brown.”

Two specimens, both with black bills.

## 43. LANIARIUS HYPOPYRRHUS.

*Laniarius hypopyrrhus* (Verr.) ; Sharpe, Cat. Afr. B. p. 49.

“Cameroons Mountains. Iris grey.”

One specimen, agreeing exactly with the bird from Fantee sent by Mr. Ussher.

## 44. LANIARIUS MULTICOLOR.

*Laniarius multicolor*, Gray ; Sharpe, Cat. Afr. B. p. 48.

A specimen of a particoloured Shrike from the Cameroons Mountains is sent by Mr. Crossley, which considerably puzzled me for some time ; but I have at last referred it to the present species. The upper surface of the body is precisely similar to other specimens in my collection from Fantee ; but underneath the Cameroons bird has none of that fiery crimson which characterizes the last named examples, but is everywhere of a beautiful orange. I presume it may be a female.

## 45. NICATOR CHLORIS.

*Nicator chloris* (Val.) ; Sharpe, Cat. Afr. B. p. 49.

“Cameroons, February 2nd, 1871.”

## Fam. ORIOLIDÆ.

## 46. ORIOLUS BRACHYRHYNCHUS.

*Oriolus brachyrhynchus*, Sw. ; Sharpe, Cat. Afr. B. p. 54.

Four specimens, collected on the Cameroons Mountains between the 8th and 21st of February. I have no doubt that I was right in joining *O. baruffi* to *O. brachyrhynchus*, as I did in my ‘Catalogue,’ and not separating them as in my paper on the African *Oriolidæ* (Ibis, 1870, p. 227), though I expressed my doubts as to their specific distinctness on the last-named occasion.

## Fam. LAMPROTORNITHIDÆ.

## 47. LAMPROCOLIUS PURPUREICEPS.

*Lamprocolius purpureiceps*, Verr. ; Hartl. Orn. W. Afr. p. 119.

“Cameroons Mountains, January 19th and 20th, 1871. Iris brown.”

I had already received this species from Cameroons ; but, owing to its being immature and having been preserved in spirits, M. Jules Verreaux and I were unable to identify it properly, and we referred it to *L. cupreocauda* (cf. Cat. Afr. B. p. 55).

## 48. HYPHANTORNIS TEXTOR.

*Hyphantornis textor* (Gm.); Sharpe, Cat. Afr. B. p. 59.

One specimen, from the Cameroons Mountains.

## 49. HYPHANTORNIS AURANTIA.

*Hyphantornis aurantia* (V.); Hart. Orn. W. Afr. p. 121.

"Bonny, November 21st, 1870."

I obtained a short time back two specimens of this Weaver bird from Mr. Higgins, out of an old collection of Du Chaillu's. The bird now sent by Mr. Crossley exactly agrees with these Gaboon examples, and they are certainly referable to the *Malimbus aurantius* of Vieillot (Ois. Chant. pl. 44). But, although these two specimens of Du Chaillu's must have passed through the hands of the late Mr. Cassin in America before they arrived in this country, I am unable to find the species mentioned in any of his lists of Gaboon birds, and I think he may have considered it to be the female of *H. grayi*. I have the hen of this latter bird in my collection; and it is certainly quite distinct from the species now under consideration.

## 50. HYPHANTORNIS FLAVIGULA.

*Hyphantornis grayi*, Verr.; Hartl. Orn. W. Afr. p. 122.

"Cameroons Mountains."

Agrees with a female specimen in my collection from the River Volta, but it is more greenish and not so richly coloured.

## 51. MALIMBUS NITENS.

*Malimbus nitens* (Gray); Sharpe, Cat. Afr. B. p. 60.

"Cameroons Mountains, January 21st and February 2nd, 1871. Iris red."

## 52. MALIMBUS CRISTATUS.

*Malimbus cristatus* (V.); Sharpe, Cat. Afr. B. p. 60.

"Cameroons Mountains, February 7th and 23rd, 1871."

## 53. MALIMBUS SCUTATUS.

*Malimbus scutatus* (Cass.); Sharpe, Cat. Afr. B. p. 60.

"Cameroons Mountains, January 31st and February 9th, 1871."

## 54. MALIMBUS NIGERRIMUS.

*Malimbus nigerrimus* (V.); Sharpe, Cat. Afr. B. p. 60.

"Cameroons Mountains, January 20th and 21st, and February 4th, 1871.

## 55. NIGRITA LUTEIFRONS.

*Nigrila luteifrons*, Verr.; Sharpe, Cat. Afr. B. p. 61.

"Cameroons Mountains."

One adult bird.